A PARALLEL

Of the different

METHODS

Of Extracting the

STONE

Out of the

BLADDER.

Tranſlated from the FRENCH of

HENRY FRANCIS LE DRAN,

Surgeon-Major at *la Charité*, and Demonſtrator of ANATOMY in the ſame Hoſpital.

REVIS'D and CORRECTED

By *THOMAS DALE*, M. D.

LONDON:

Printed for J. WILCOX, at the *Green-Dragon* in *Little-Britain*. 1731.

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THE

PREFACE

SELF-Love is generally the principal Motive of Men's Actions; 'tis that which determines an Author to communicate his Works to the Publick, and if in a very modest Preface

he desires their Favour and their Approbation, he at the same Time imagines they cannot refuse it him without Injustice, and that they ought even to thank him for all the Trouble he has taken therein. Nevertheless he is mistaken; far from being pleas'd, they criticise upon him, and 'tis for that very Reason alone they take the Pains to read him. 'Tis very easy to discover their Motive to this; a little Self-conceit will not suffer us to receive Lessons upon a Sub-

Subject which we imagine we underſtand better than any one elſe.

WERE I to follow the Advice of Self-Love, I ſhould not publiſh this Parallel between the different Methods of cutting for the Stone; for I am ſenſible of the Reaſons which may excite Criticiſm. Every one being jealous of his own Method, would have the Preference given to that, either thro' Prejudice, or Self-Intereſt, and from the whole Tenour of the Book

perhaps will perſuade himſelf that thro' this Principle I give the Preheminence to the grand *Apparatus*, and write only in its Favour becauſe that is the Method which I have follow'd to this Day.

To be a good Judge in Sciences, one muſt know how to diſengage one's ſelf from Prepoſſeſſion and Self-Love. When an Author cannot do this, he ought not to write, ſince Prejudice will not ſuffer him to conſider Things on every Side,

and

and if he ſets himſelf up for infallible, he muſt forgive the Reader, who happens to be concern'd therein, if he takes the Liberty not to be of his Opinion. I do not pretend to be ſo, and if I ſometimes determine on any Side in this *Parallel*, I only declare my Sentiments without preſuming to conſtrain others who may differ from me.

I MIGHT have ſupported myſelf with the Approbations of ſeveral of my Friends, who poſſibly would not have refuſed me that

Favour. I believe likewiſe that Friendſhip, which is officious, might have ſuggeſted to them ſuch Elogiums as the Reader ſometimes finds very ill placed; but this vain-glorious Formality is ſo far from being a Proof of the Merit of a Book, that it often renders it very much ſuſpected. Beſides, by a neceſſary Conſequence, they who give their Approbation to a Work always partake with the Author of the Blame that may fall upon it: Wherefore I

did

did not think proper to exact it of their Complaiſance; for which Reaſon, contrary to the uſual Cuſtom, there are none ſeen at the Head of mine. If a Book is really good, it will certainly be approved by the Majority, and if it is not, the publick Good requires it to be ſuppreſſed by a judicious Criticiſm.

THE ſole End I propos'd to myſelf in this *Treatiſe*, was to diſcuſs, and clear up, as well as I could, a Matter which has for a long Time been

been the Subject of diſpute, and that with ſo much the more Reaſon, as the Lives of Mankind are intereſted therein. It is not a compleat *Treatiſe* of *Lithotomy*, ſince I neither enter into the Formation of the Stone, the Accidents cauſed by its Continuance in the Bladder, the Signs which denote it, or into that which ought to precede or follow the Operation, the Queſtion in Hand being only about the Choice of the Method which we ought to follow in extracting it.

I BEGIN by an *anatomical Detail* of the Parts concern'd in the Operation, in following each of those Methods which are practis'd as well in *France*, as in foreign Countries: And as the Knowledge of the Situation of each of these Parts is essential, I make a Repetition of them, and present them to the Mind of the anatomical Reader as I dissect them, as others present them to his Eyes engraven upon Plates. I have pass'd over in this Account many Things that would be re-

required in a compleat Treatiſe of Anatomy; they would have ſerved here only to ſwell this Volume, and being of no Uſe in the Parallel which I am to make, they might have diverted the Reader's Attention from what ought to fix his Judgment and his Choice.

AFTER this I enter upon the *manual Part* of each of theſe Operations, one after another. I examine likewiſe the *Inconveniences* to which they are liable, and the *Advantages* that may be derived

ed

ed from them. This done, I deliver the *Experiments* I have made upon the dead Bodies which I have cut for the Stone, according to the different Methods, and according to the Practice of each *Lithotomiſt*. From theſe repeated Experiments I drew my *Conſequences*, and from them the Reader alſo may draw his.

Two Sorts of Perſons will read this *Parallel*. The one to make their Advantage thereof, if it contains any Thing good, and the other

to

to censure it. The first will do me an Honour, and the last will do me a Pleasure, since I may profit thereby, and correct in another Edition the Faults which may have escaped me in this; wherefore I willingly give up the Interests of Self-Love to secure those of Surgery. That is my prevailing Passion, and my Book having no other Aim than to be assisting towards the bringing it to Perfection, it would not be just to have the Faults of the Author imputed to that Science.

A D-

ADVERTISEMENT.

IN giving an Account of the different Methods of Cutting for the Stone, I expreſs my ſelf ſometimes in theſe Terms: I place the Patient, &c. I make an Inciſion, &c. I uſe ſuch a Precaution, &c. *without deſigning to draw any Vanity to myſelf from what I may perhaps have contributed towards the Perfection of this Work. Wherefore I give the Reader Notice that I don't pretend to deprive thoſe who have written upon theſe Operations, or who have practis'd them before me, of what*

may

may belong to them; and that these indicative Terms signify no more than the Choice of what seem'd most proper to me for the well performing of the Operation.

As the Title of the Book may excite the Curiosity of some particular Persons but little vers'd in anatomical Terms, I thought it was necessary to instruct them therein, by placing at the Bottom of the Pages the Definition of the Parts whereof I am oblig'd to speak, according as they occur.

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A PARALLEL

Of the different

MANNERS

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Out of the BLADDER.

INTRODUCTION.

THE Object of Surgery is the Preservation of Men's Lives as much as possible. This Motive is of Consequence enough to induce

all thoſe who have taken up this Profeſſion to do their utmoſt to excel therein.

THE firſt Surgeons have made themſelves famous by the Invention of ſeveral Operations, which all tend to this great End; but it was impoſſible for them to bring them to perfection. Being call'd to the ſame Study, and having the Benefit of their Lights, we have contracted an Obligation (I dare venture to affirm it) to labour inceſſantly to bring to maturity, if it be poſſible, what they have ſo fortunately begun.

AMONGST all the Operations, there are few ſo difficult as *Lithotomy*; this fell at firſt to the Share of ſome Operators who apply'd themſelves wholly to the Cure of Diſeaſes in the Bladder. Whether it were thro' Jealouſy, or thro' Intereſt, they made a Myſtery of their

their Method a long Time, and would bring up no other Pupils but their own Sons; nevertheless as these Men, who were so covetous of their Knowledge, could not perform their Operations without the Help of several Assistants, the Art at last made its Way into the World, and several Pupils were train'd up.

EMULATION has added to the first Lights; and the Progress of Surgery towards the End of the *16th* Century, together with its Success, has excited the Efforts of Surgeons, so that several of them have try'd new Ways for the Extraction of the Stone, whilst others have apply'd themselves to perfecting the ancient Methods.

WE have but five which are in Use, *viz.*

The *Apparatus Minor.*

The *Apparatus Major.*

The High Method.

The lateral Operation of Mr. *Rau.*

And that of Mr. *Cheſelden.*

OF all theſe Methods, that ought beyond Contradiction to be eſteem'd the beſt, which is founded upon the Structure of the Parts that have Relation to the Extraction of the Stone, upon their Situation, and upon their Mechaniſm. For this Reaſon, I ſhall begin with an Explanation of the Parts which are concern'd in each of theſe Operations. I will give a Plan thereof, which ſhall be as exact as is neceſſary to clear up the Matter whereof I am to treat; and that I may do it the more uſefully, I will ſet them before the Reader's Eyes in the ſame Poſition wherein they are at the Time of performing the Operation, on ſuppoſing the Patient placed upon his Back,

which

which is almoſt the ſame Situation wherein they put him when they perform it, whatever Method they follow.

PLATE I.

FIGURE I. *Repreſents the* Pelvis, *ſuppoſing the Body placed almoſt upon its Back, and a little on one Side.*

A THE *Oſſa Pubis.*

B The *Symphyſis* of the *Oſſa Pubis.*

C The Arch of the *Pubis.*

D The Junction of the *Oſſa Pubis* to the *Oſſa Iſchia.*

E The *Oſſa Iſchia.*

F The *Tuberoſitys* of the *Oſſa Iſchia.*

G The Spines of the *Oſſa Iſchia.*

H The *Oſſa Ilia.*

I The Sloping of the *Oſſa Ilia* on the left Side.

L The *Os Sacrum.*

M The *Os Coccyx.*
N The *Foramen Ovalare* on the right Side.
O The Cavity *Cotyloides*, which belongs to the Articulation of the Thigh.

FIGURE II. *Represents the* Pelvis, *supposing the Body upon its Back, as in the foregoing Plate, and view'd before.*

A THE *Ossa Pubis.*
B The *Symphysis* of the *Ossa Pubis.*
C The Top of the Arch of the *Pubis.*
D The Junction of the *Ossa Pubis* with the *Ossa Ischia.*
E The *Ossa Ischia.*
F The *Tuberositys* of the *Ossa Ischia.*
H The two *Ossa Ilia.*
L The *Os Sacrum.*
M The *Os Coccyx.*
N The *Foramina Ovalaria.*
O The Cavity *Cotylaides*, which belongs to the Articulation of the Thigh.

THE

A. fol. 5.

Fig. 1.

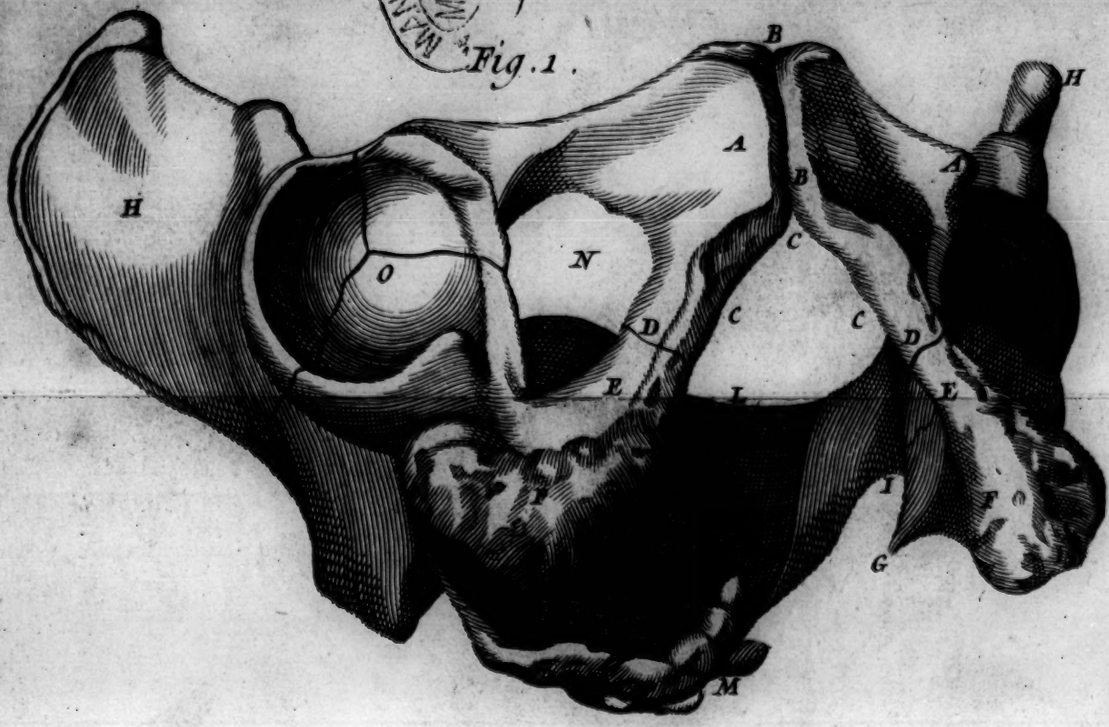
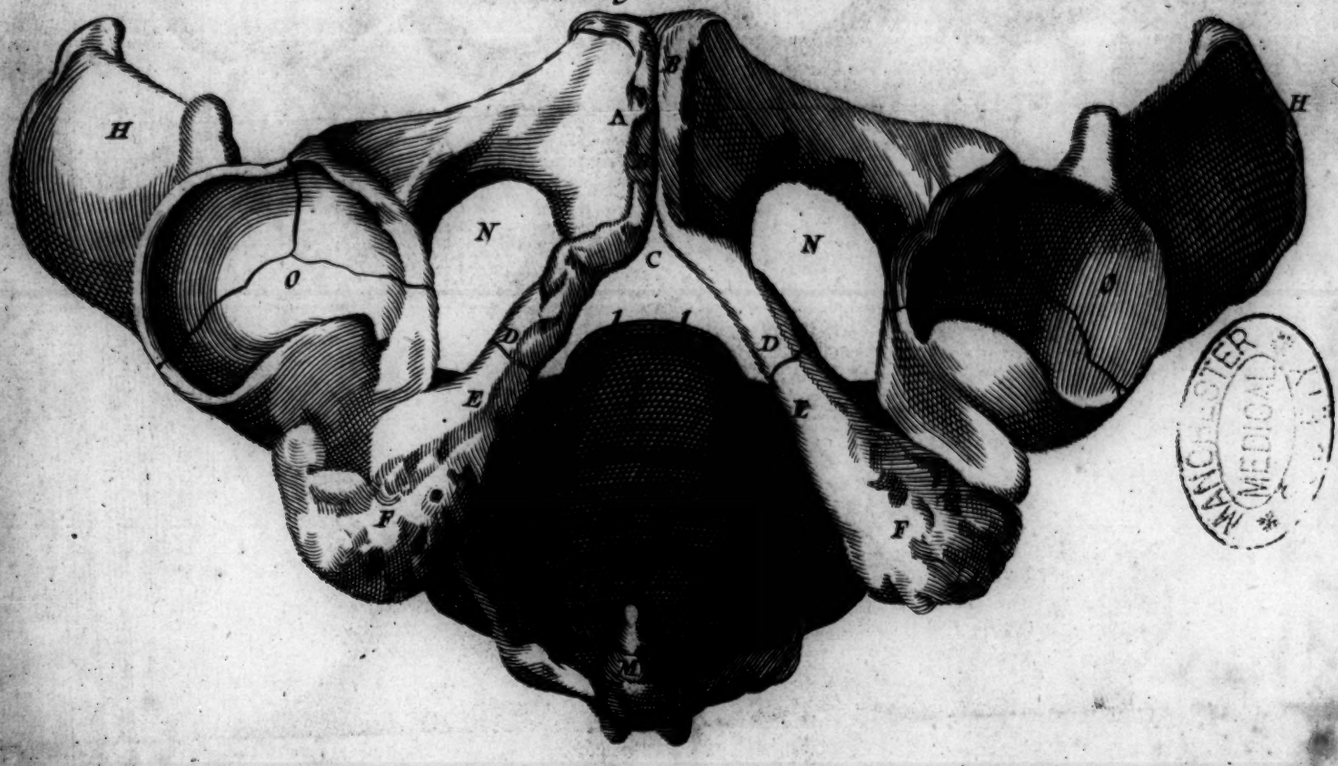


Fig. 2.c



Drawn Scop

THE DESCRIPTION OF THE PARTS

That either are, or may be, concern'd in

LITHOTOMY.

THE Bladder is a hollow Muſcle deſign'd to ſerve as a Receptacle for the Urine, to the End that one may not be oblig'd to make Water at every Inſtant. Vid. pl. 2. fig. 2. F.

Its Bigneſs cannot be aſcertain'd, it being pretty large in ſome, whilſt in others it is naturally ſmall. It The Bigneſs of the Bladder.

is larger in Children than in adult Persons, proportionably to the Size of their Bodies.

Vid. pl. 1. Situation of the Bladder. Vid. pl. 2. fig. 2. F.

IT is situated in the * *Pelvis*, between the *Os Ilium*, the *Os Pubis*, the *Os Ischium*, the *Os Sacrum*, and the *Coccyx*. It is closed in there by a membranous and very strong *Septum*, which separates it from the Parts of the *Abdomen*. This *Septum* is continued to the Portion of the *Peritonæum* † which covers all the inner Part of

* *Pelvis*. Is a Collection of divers Bones situated at the lower Part of the Trunk, which by their Junction form a Sort of a Bason that has no Bottom.

† *Peritonæum*. Is a Texture of very fine Filaments and Vessels, which by their Intercourse form a Sort of fine Cloth, which Anatomists term a Membrane. This Membrane covers all the inner Part of the *Abdomen*. Besides this it forms some *Septa* which separate its Cavity into several Sorts of Chambers, and supply all the Parts that are contain'd therein with a particular Membrane.

the

the * *Abdomen.* Thus 'tis the *Peritonæum* itſelf which forms the *Septum.*

THE Antients have compared the Bladder to a Bottle with the Mouth downwards.

IN the Attitude wherein I deſcribe it, I ſhall conſider it as lying down, and leaning; in the Man, upon the † *Inteſtinum Rectum*, and in the Woman, upon the ‡ *Vagina* and the Neck of the *Uterus.*

* *Abdomen.* Is what they vulgarly call the Belly.

† *Inteſtinum Rectum.* They call *Inteſtines* the Canal which protrudes the Excrements. This Canal is divided into ſix *Inteſtines*, three ſmall and three large. The *Rectum* is the laſt of the large. It lies upon the *Os Sacrum*, and terminates at the *Anus.*

‡ *Vagina.* Is the Conduit which leads to the *Matrix.* The *Uterus* is plac'd in the *Pelvis*, between the *Inteſtinum Rectum* and the Bladder.

MORE-

MOREOVER it must be obsery'd that the Bladder is join'd to these Parts, in both Sexes, by a cellular Texture whereof I shall speak hereafter.

Structure of the Bladder.

THE inner Part of the Bladder is form'd by a Membrane which is pretty fine, smooth, and polish'd on the Side of the Cavity, when the Bladder is full; but full of Wrinkles, when it is void of Urine. Upon this Membrane are placed a Number of * muscolous Fibres rang'd in different Ways, and across the Intervals of these Fibres there proceeds from the internal

* *Muscolous Fibre.* Is a red Fibre capable of contracting it self, in such a Manner, that the two Extremities are brought near to each other. This Contraction in some depends upon our Will, in others it is mechanical. Several muscolous Fibres united together form what they call a Muscle, and the Muscle by its Contraction is destin'd to move a moveable Part.

Mem-

Membrane, a Number of membranous little Leaves that form a cellular Texture which ſurrounds the whole Bladder, and whereby it is faſtened to the neighbouring Parts.

THE Filaments that compoſe the Texture of theſe Membranes, and the muſculous Fibres, as well as all the other Parts of the Body have an * elaſtick Virtue, in Conſequence whereof, they have a Tendency to reſume their former State when they have been extended; and the muſculous Fibres have a Contraction beyond the membranous Fibres, which is proper to them, and depends upon our Will.

* *Elaſtick Virtue.* Is properly what is call'd a Spring. Thus a *Corde a Boyau* which has been extended, contracts it ſelf by its elaſtick Virtue if it ceaſes to be extended. All our Parts have more or leſs elaſtick Force.

BUT

BUT neither the one or the other can contract themſelves thus, if they are not firſt extended; and they are ſo, when the Urine fills the Bladder by little and little; and that Extenſion, which becomes more or leſs ſenſible, or even painful, according to its Degree, is what obliges us to uſe the proper Endeavours to make Water.

THE Bladder muſt be conſider'd either as empty, as full, or has having in it but a ſmall Quantity of Urine; thus according to its different State it has different Figures, and takes up more or leſs Space. When it is empty, it lies in the *Pelvis* behind, and a little under the *Os Pubis*; I ſay under the *Os Pubis*; becauſe in the Poſture wherein the Patient is placed, this Bone by its Junction forms a

Vid. pl. 1. fig. 1. A. and pl. 2. fig. 2. H.

Demi-

Demi-Arch, under which the Bladder is partly hid. They call that Space the Arch of the *Pubis*, which is form'd by the joining of the inferiour Part of the *Ossa Pubis* with the *Ossa Ischia*.

IN Proportion as the Bladder fills, it extends itself towards the *Abdomen*, protruding on that Side the membranous *Septum* which separates it from the other Parts. This Prominence is more or less large, according as the Bladder is full. When it is as full as possible, it also extends itself towards the lower Part of the *Abdomen*, raising up the Skin, and the other Integuments of the Belly.

WHETHER there be much Water in the Bladder, or but little, it is always full, or almost full; because its Fibres continually drawing

ing near its Sides, leſſen its Capacity. When there is a great deal it is round and oblong, but yet in ſuch a manner that it is larger at that Part which is towards the Neck, than in that which touches the membranous *Septum*. When it is empty, its Cavity is leſs every way, on Account of the Contraction of its Fibres; but then it is no longer round, becauſe its Bottom is thruſt towards the *Os Pubis*, by the Bulk of the **Inteſtines*, which the Contraction of the Muſcles of the *Abdomen* † and of the *Dia-*

* *Inteſtines.* They fill the greateſt Part of the Belly. They are moveable, and obedient to the different Motions of the Parts that ſurround and touch them.

† *Muſcles of the Abdomen.* Are ſeveral Muſcles which by the Diſpoſition of the Fibres that compoſe them, are pretty ſmall. Theſe Muſcles ſurround the Belly, and are placed beneath the Skin. By the Contraction which is proper to them, they leſſen the Cavity of the Belly according to its different Occaſions.

phragm

phragm *, force upon the *Septum* which confines it in the *Pelvis*. Thus it it flatten'd and render'd broader than it is deep.

THAT Part of the Bladder that is toward the *Os Pubis*, terminates at an opening, which I shall call its Orifice. One may see this Orifice very plainly on opening the Bladder at its Bottom. The Circumference of this Orifice is something thicker than the rest of the Bladder. This is what some call the *Sphincter* †. Orifice of the Bladder. Description 5.

THE Canal which joins to this Orifice, takes different Names from Space to Space in Proportion as it grows longer. Its beginning is call'd the Neck of the Bladder. Neck of the Bladder.

* *Diaphragm.* Is a Muscle, the Disposition of whose Fibres make a Sort of a Floor which separates the Breast from the Belly.

† *Sphincter.* Is a Muscle, whose Fibres by their Disposition, form a Sort of a Ring; it is destin'd to close some opening.

This

This Neck is not above from eight to ten Lines long, to the Space which is nam'd the Beginning of the *Urethra* †. When the Bladder is blown up with force, the little Hole which I have term'd its Orifice, diſappears, and the Neck being diſtended by the Air wherewith 'tis fill'd, forms a Sort of a Funnel joining to the Bladder; but when one has expell'd the Air, the Neck reaſſumes its Shape of a Canal, becauſe the Fibres which enter into its Compoſition, draw near the Sides of each other, and the Orifice begins to be viſible.

In opening the Neck on that Side which is towards the *Os Pubis*, one ſees juſt oppoſite to the Inciſion, what they call the *Verumontanum*. This is an Eminence or Caruncle, which

† *Urethra*. Is the Pipe, thro' which the Urine paſſes out from the Bladder.

cloſes

cloſes the End of the excretory Duct of the *Veſiculæ ſeminales*, whereof I ſhall ſpeak immediately. Around the *Verumontanum*, are found ſeveral little Openings: Theſe are the Mouths of the excretory Ducts of the Glands, call'd the *Proſtatæ*.

THE *Proſtatæ* are two conglomerate Glands, placed at the Neck of the Bladder. As this Neck is join'd to the Bladder, it receives the ſame Membranes into its Compoſition. 'Tis between theſe very Membranes that the Glands whereof we are ſpeaking, are ſituated, and they take up, by their aſſemblage, almoſt the whole Circumference of the Neck. *Proſtatæ.* Pl. 2. fig. 2. C.

SOME of the muſculous Fibres which enter into the Compoſition of the Bladder, reuniting above its Orifice, behind the

Pl. 2. fig. 2. E. * *Symphiſis* of the *Oſſa Pubis* terminate by two Tendons †, which are inſerted into this Bone, on both Sides of that *Symphiſis*, at its lower Part. Theſe Tendons are diſtant from each other about ſix Lines. The other fleſhy Fibres are terminated at its Orifice and Neck, by a very ſtrong *Aponeuroſis*.

* *Symphiſis.* Is the Term Anatomiſts uſe to expreſs the Conjunction of the two *Oſſa Pubis* by the Interpoſition of a Body, not altogether ſo hard as the Bone, and which they term a Cartilage. They call the *Pubes* the Aſſemblage of the two *Oſſa Pubis*.

† *Tendon.* Is a Collection of white Filaments, which generally terminate the muſculous Fibre or the Muſcle. It ſerves to faſten the Muſcle to that Part which it muſt move by its Contraction. If the Aſſemblage of theſe Threads make a Sort of Cord, 'tis call'd a Tendon; if their Diſpoſition forms a flat Bandage like Parchment, 'tis nam'd *Aponeuroſis*; ſo that the Arrangement of the Threads makes the only Difference between the Tendon and the *Aponeuroſis*.

A STRONG *Aponeurotic* Bandage between four and five Lines in Breadth, and in the Form of a Ligament, is fasten'd to the two *Ossa Pubis* at the Top of the Arch, and there makes a Sort of Chain; as if 'twere possible for these Bones to separate from each other, and that were made to retain them. This Bandage is placed a little below the Tendons of the Bladder, and above its Neck; it leaves a Space between it and the Bottom of the *Symphisis* of the *Ossa Pubis*. Description 7.

IT seems to extend on each Side to the *Aponeurotic* Principle on the back Part of the * *Gracilis*, and the two inferiour Heads of the *Triceps*. 'Tis join'd only by some Fibres to the Neck of the Bladder, altho' it be precise-

* The *Gracilis* and *Triceps*, Are two Muscles which move the Thigh and Leg.

ly above it; yet nevertheleſs it renders the Paſſage more difficult, when one attempts to extract a large Stone out of the Bladder by its Neck, as we ſhall ſee in the Sequel.

I SHALL return to the Canal which ſerves to convey the Urine out of the Body, when I have explain'd the Parts that ſurround the Bladder.

Faſtenings of the Bladder, Deſcription 2 and 3.

IT is faſten'd in the Place where it lies, through all its Circumference to a cellular Texture, form'd by an infinite number of membranous little Leaves, which are produced by its internal Membrane, and the Portion of the *Peritonæum* that incloſes it in the *Pelvis*.

THIS cellular Texture, which is cloſe to the Side of the Bladder, is limited on the Side of the *Oſſa Pubis* by theſe Bones themſelves, to whoſe inner Surface

face it is faſten'd. The *levatores* * *Ani*, to which it alſo adheres, confine it on both Sides of the *Pelvis* above the ſame *Oſſa Pubis*; it joins to the Portion of the *Peritonæum*, which covers the lower Part of the Sheath of the † *Muſculi Recti*, and the *Linea Alba*. Infine, it is limited towards the Bottom of the Bladder by the *Septum*

* *Levator Ani.* Is a Muſcle which retains and draws back the Margin of the *Anus*, when on going to Stool it has been thruſt outwards.

† *Muſculi Recti.* Are two Muſcles, which by the Diſpoſition of their Fibres, make two Bandages three Fingers in Breadth. Theſe Muſcles being placed according to the Line of Direction of the Body, are join'd at one End to the Cartilage *Xiphoides*, vulgarly call'd the Fork, and at the other to the *Oſſa Pubis*; each of them is incloſed in an *Aponeurotic* Sheath. Theſe two Sheaths are placed by the Side of each other on the right and the left of the Navel; their Union is what the Anatomiſts term the *Linea Alba*, and the Navel is in the Middle.

it self, whereof the little Leaves that compose it are but an *Appendage.*

When the Texture is blown up, the Air fills all its Cells, and then it is in some Places two Inches thick, in others less. Hereby one may judge how much its loose Texture may yield to the various States of the Bladder, whose Size is never the same, on Account of the Urine which continually runs into it, or is entirely thrown forth.

Upon destroying this whole Texture, one discovers, on each Side the *Levator Ani.* This Muscle is large, extended on the right and left in the *Pelvis*, great Part whereof it covers, and seems destin'd to close up this *Pelvis* towards the Arch of the *Ossa Pubis*, as the membranous *Septum* of the *Peritonæum*, which there incloses the Bladder, bounds it towards the

the *Abdomen*. It takes its Riſe from different Plans of Fibres.

Two Plans of Fibres, join'd one to the other, derive their Origin from the lower Part of the *Oſſa Pubis*, bordering on the Arch. Others have their fix'd Point above the *Foramen Ovalare* * by a Sort of *Aponeuroſis*, and others again at the Spine of the *Os Iſchion*. The whole together makes a Sort of a Curtain, which covering and hiding the *Obturator Internus* † approaches the *Inteſtinum Rectum*. Of the two Plans of Fibres which take their Riſe at the Arch of the *Os Pubis*, one is confounded with the *Sphincter Ani*, the other Plan, together with the

* *Foramen Ovalare*. Is form'd by the Union of the ſeveral Bones of the *Pelvis*. Pl. 1.

† *Muſculus Obturator*. Is a Muſcle which cloſes up the *Foramen Ovalare* on the Side of the *Pelvis*.

fleshy Fibres that pass before the *Obturator*, make but one single Muscle, which imbracing the hinder Part of the *Rectum*, goes on to join the *Levator* which comes from the opposite Side. These fleshy Fibres in their Progress are immediately fasten'd to the *Prostatæ*, the *Sphincter* of the Bladder, and one Part of its Body for two Fingers Breadth above its Orifice.

ON examing the Situation of this Muscle, its Figure and different Attachments it seems that Nature has not made it for the Use of the *Anus* alone, but that it is as useful to the *Rectum* and the Bladder, as to the *Anus*. Every time a Man strains himself, all the Parts of the *Abdomen* are thrust towards the *Pelvis*, and the Space which is found at its Bottom between the *Ossa Pubis*, the *Ossa Ischia*, and the

Os

Os Sacrum, would occaſion frequent *Herniæ* were it not for this Muſcle (for we call the diſplacing of any ſoft Part whatever a *Hernia*:) Now the Bladder and the *Rectum* being placed exactly before this Space, which is pretty large, theſe Parts might by the leaſt Strain be forced under the Arch as far as the *Perinæum* * if the *Levator Ani* did not withhold them. But it is too ſtrongly faſtened to theſe Parts to ſuffer them to be diſplac'd; wherefore it is no leſs the Support and *Levator* of the Bladder than of the *Anus*.

BETWEEN the *Rectum* and the Bladder in the cellular Texture which connects theſe two Parts together are the *Veſiculæ Seminales*. Theſe are two membranous Bags about half an Inch broad, and al- Veſiculæ Seminales, pl. 1. fig. 2. G.

* *Perinæum*. The Space between the *Scrotum* and the *Anus*.

moſt

most two Inches long. They are placed under the Bladder, in such a Manner, that with one of their Extremities they touch one another exactly underneath the Orifice. Their other Extremity, which lies towards the Bottom of the Bladder, separating to the right and to the left, always between the *Rectum* and the Bladder, makes almost a perfect Triangle. Their Inside is composed of abundance of little Cells, which have all a Communication with each other. Their excretory Ducts reunite, and by their Union make but one Duct, which opens into the Neck of the Bladder at the *Verumontanum*, as I have observed.

I RETURN now to the Canal which conveys the Urine, call'd the *Urethra*.

The *Urethra* and its Progress, pl. 2. fig. 2. I.

THE *Urethra* begins where the Neck of the Bladder ends, under

under the Arch of the *Pubes*.

THE Beginning of this Canal is, for the Length of between ſix and ſeven Lines, of a different Nature to what it is in its Progreſs. This Beginning is wider, membranous and very thin, which renders it capable of ſtretching to a certain Degree, and if Neceſſity requires it, to give Way without any Reſiſtance. The reſt of the Canal is ſtraiter and of an *Aponeurotic* Texture. The Anatomiſts ſay that it is compoſed of two Membranes, the one internal, the other external, between which is found a ſpongious Texture capable of ſwelling. Theſe two Membranes are ſo ſtrong, that one may call them two *Aponeuroſes*. The ſpongious Texture which ſeparates them from each other is of the ſame Nature, which renders this Part of the Canal incapable, with- Pl. 2. fig. 2. L.

without a violent Strain, of giving Way to any Body of a moderate Size, which one would introduce therein.

THIS Texture is more conſiderable at the two Extremities of the *Urethra*, than in the Middle. At the Beginning, that is to ſay, at the Place where the *Urethra* begins to be tendinous, the Texture makes a Sort of a Crop, which is call'd the Bulb of the *Urethra*, and at the other Extremity it forms what they name the *Glans*.

THE *Urethra* making a Quarter of a Circle aſcends toward the fore Part of the *Os Pubis*, where it begins to enter into the Compoſition of the *Penis*.

Corpora Cavernoſa, pl. 2. fig. 2.

ON the inner Side of the *Oſſa Pubis*, almoſt at the lower Part, begin the two *Corpora Cavernoſa* by an obtuſe Origin of the Size of the little Finger. They in-

increaſe in Bulk to the Bigneſs of the Thumb. Their whole external *Superficies* is of an *Aponeurotic* Texture, and very ſtrong. I ſay nothing of their Inſide, becauſe it is foreign to the Matter whereof I am to treat. Theſe two Bodies having aſcended half an Inch, approach and join each other at the fore and lower Part of the *Symphiſis* of the *Oſſa Pubis*, immediately above the *Urethra*. They form the Body of the *Penis* jointly with this Canal, which is faſten'd thereto on the under Side.

UNDER the Arch of the *Pubes*, along the lower Part of theſe Bones, and that Portion of the *Oſſa Iſchia*, which aſſiſts them in forming the *Foramina Ovalaria*, one meets with Parts which it is of great Importance to know.

A LITTLE towards the hinder Part of the *Oſſa Iſchia*, beneath the

Muſcuſi Erectores

Pl. 2. fig. 2. L. their Union with the *Ossa Pubis*, one sees two Muscles nam'd *Erectores*, which there take their Rise by a fleshy Origin. These Muscles ascending along these Bones half under the Arch, and half on the Side of the *Pelvis*, imbrace the Root of the *Corpora Cavernosa*.

Musculi Acceleratores. Two other Muscles, nam'd *Acceleratores*, are connected by two Tendons, to the *Sphincter Ani*, which is their fix'd Point. Being join'd one to the other, they embrace the *Urethra*, from their their Origin up to the Bottom of the *Symphisis* of the *Ossa Pubis*, and growing wider, each of them affixes it self to the *Corpus Cavernosum* on the same Side.

Transversal Muscle. ANOTHER Muscle, named the *Transversalis*, takes its Rise at the *Ischion*, under the Place where it joins it self to the *Os Pubis*, almost as high as the lower Part of the *Foramen*

ramen Ovalare. It passes between the *Rectum* and the membranous Part of the *Urethra*, after which it goes on to terminate at the *Os Ischion* on the other Side. Some Anatomists look upon it as two distinct Muscles, one on each Side, which terminates at the membranous Part of the *Urethra*. Whether it be one single Muscle, or two, is of no Consequence to our Operations.

UNDER the Skin of the *Penis* and *Scrotum* is found a cellular Texture, almost like that which surrounds the Bladder. This Texture extends even as far as the *Perinæum*, it is joined to the *Cellulæ Adiposæ* which are between the bending of the *Urethra* and the *Sphincter Ani*, to those which are on both Sides of the *Rectum*, and to those which form the *Panniculus* Pl. 2. fig. 2. S.

niculus Adipoſus * under the Skin. This cellular Texture is not continued to that which ſurrounds the Bladder, for on blowing up the one, the Air does not penetrate into the Veſicles of the other.

Pl. 2. fig. 2. X. IN a Man one ſees, above the Bladder, the *Rectum* which terminates at the *Anus*. This Inteſtine adheres very much to the Bulb of the *Urethra*, to its membranous Part, to the Neck of the Bladder, and to its Body, within three Inches of its Orifice, ſuppoſing it full and in its greateſt Extenſion.

Veſſels. I SHALL finiſh this Account by the Veſſels which irrigate all theſe Parts; and that I may inſert nothing Foreign to the Mat-

* *Panniculus Adipoſus.* Is a Number of little membranous Cells that are found under the Skin, almoſt all over the Body; and which are more or leſs full of Fat, according to the Plight of the Perſons.

ter

ter in hand, I will only mention those which may be concern'd in the different Operations whereof I shall give an Account.

THE Artery call'd the * internal *Iliac*, sends into the *Pelvis* several Branches which separate themselves. Pl. 2. fig. 2. I.

THE one issues out of the *Pelvis* by a Sloping which is at the hinder Part of the *Ossa Ilia*, and it divides it self; one, call'd the muscular Branch, goes to the *Musculus Glutæus*, another nam'd the *Pudenda Interna*, passes behind the Spine of the *Ischion*, continues its Course between the two Ligaments which join the *Os Sacrum* and the *Protuberance*, and runs afterwards along the internal Part of this *Protuberance*. It there sends out one or more Branches, call'd the exter- Idem 3.

* *Iliac Artery.* An Artery is a Vessel by which the Blood is carry'd to the several Parts.

nal *Hemorrhoidals*, which go to the *Rectum*, after which it mounts under the Arch of the *Pubes*, between the *Erector* and the *Accelerator*.

THIS Artery being arriv'd before the Arch as high as the Middle of the *Foramen Ovalare*; ſends out one or more Branches, which going to the *Perinæum*, cut it tranſverſely, and loſe themſelves in the cellular Texture of the *Urethra*.

Pl. 2. fig. 1. Q. & fig. 2. C.

IT ſends afterwards many Branches into the *Corpus Cavernoſum*, and aſcending under the *Symphyſis* of the *Pubes*, creeps along the Back of the *Penis*.

SOMETIMES the internal *Iliac* ſends another Branch, which creeps on the cellular Texture of the *Pelvis*, between the Bladder and the *Levator Ani*. It ſends ſome Branches to the Body of the Bladder,

der, gives ſome to the *Veſiculæ Seminales*, and others to the *Proſtatæ* and Neck of the Bladder, after which it continues its Courſe along the Back of the *Penis*, paſſing between that and the *Symphyſis* of the *Pubes*. In this Caſe the *Arteria Pudenda* ends, and is loſt in the *Corpora Cavernoſa* without going upon the Back of the *Penis*.

As the Knowledge of the juſt and exact Poſition of all theſe Parts, is eſſential to the different Manners of operating, and for the more exact diſcovering the Inconveniencies to which they are liable, I ſhall ſet them before the Reader, as they preſent themſelves in diſſection. I ſhall endeavour to deſcribe them ſo clearly, that they who have the leaſt Tincture of Anatomy may underſtand me, and even be able to follow me as they diſſect.

PLATE II.

FIGURE I. *Repreſents the Poſition of the* Pelvis, *when the Patient is placed horizontally, as is practis'd in the Operations of Mr.* Rau, *and Mr.* Cheſelden.

A THE *Os Pubis.*
B The *Os Ilion.*
C The *Os Iſchion.*
D The *Tuberoſitys* of the *Os Iſchion.*
E The Spine of the *Os Iſchion.*
F The *Os Sacrum* and the *Coccyx.*
G Part of the *Penis* inverted and ſtript of its Skin.
H The *Urethra.*
I The *Corpora Cavernoſa.*
L The *Acceleratores* covering Part of the *Urethra.*
M The *Erectores.*
N The *Anus* and its Margin.
O The *Inteſtinum Rectum.*

P The

Fig. 1re

Fig. 2e

P The external *Hemorrhoidal* Arteries.

Q A Branch of the *Arteria Pudenda*, which goes to the Bulb of the *Urethra*.

R The *Arteria Pudenda* which paſſes behind the Spine of the *Os Iſchion*, and afterwards behind the *Tuberoſity*, between the poſterior Part of the *Erector* and *Accelerator*.

S A Ligament which goes from the *Os Sacrum* to the *Tuberoſity* of the *Iſchion*.

PLATE II.

FIGURE II. *Repreſents a vertical Section wherein is ſeen the Bladder in profile, and all the Parts adjacent which have any Relation to the different Manners of performing the Operation for the Stone.*

A THE Bladder blown up, whereon we may ſee all the fleſhy Fibres, becauſe all the cellular Texture that covers it is taken away.

B The Bottom of the Bladder.

C The *Proſtatæ* which cover the Neck of the Bladder.

D The Entrance of the *Urethra* into the Bladder.

E The Tendons of the Bladder.

F Part of the *Peritonæum* that incloſes the Bladder in the *Pelvis*.

G The

G The *Veſicula Seminalis* on the left Side.

H A Portion of the *Os Pubis* on the left Side, ſaw'd within three Lines of its *Symphyſis*.

I The membranous Part of the *Urethra*, or its Beginning.

K The Bulb of the *Urethra*.

L The *Urethra*.

M The *Corpus Cavernoſum Dextrum*.

N The *Corpus Cavernoſum Sinistrum*, Part whereof is cut.

O Part of the *Penis* covered with the Skin.

P The ſuſpenſory Ligament of the *Penis*.

Q The *Scrotum*.

R The *Perinæum* which extends from the *Anus* to the End of the *Penis*.

S The Thickneſs of the Teguments from the *Perinæum* to the *Urethra*.

T The right Buttock.
V The *Anus*.
W The *Sphincter Ani*.
X The *Inteſtinum Rectum*.
Y The *Os Coccygis*.
Z The *Os Sacrum*.
& The laſt *Vertebra* of the Loins.
1 The Trunk of the *Iliac* Artery.
2 The *Hypogaſtric* Artery.
3 Branches of the Arteries which iſſue from the *Pelvis* by the Sloping of the *Oſſa Ilia* to go to the Muſcles.
4 The external *Hemorrhoidal* Branches.
5 The *Arteria Pudenda Interna*.
6 A Branch of the *Pudenda* which goes to the Bulb of the *Urethra*.
7 The *Umbilical* Artery.
8 The Branches of the *Umbilical* Artery which go to the Bladder, the *Veſiculæ Seminales*, and the *Proſtatæ*.

A

VIEW

OF THE

BLADDER, and the Parts that ſurround it on the Side of the *Abdomen*.

DESCRIPTION I.

THE Subject being placed upon his Back, I make in the *Abdomen* an Inciſion croſwiſe, whereby I cut the Skin and the Muſcles, the Middle of the Croſs is at the Navel, and the Inciſion which tends towards the *Os Pubis*, ends within four Inches on this Side of that Bone. I turn back

back the four Angles made by the Inciſion.

I CARRY my Hand on the Side of the *Pubes*, under that Portion of the Muſcles which I have not cut; I there perceive a Cavity which is fill'd by the ſmall Inteſtines, and which is bounded by the membranous *Septum* which incloſes the Bladder in the *Pelvis*. Acroſs this *Septum* I feel the Hardneſs of the *Os Pubis*. As there is no Urine in the Bladder, I cannot eaſily diſtinguiſh its Dimenſions.

Vid. pl. 2. fig. 2. F.

DESCRIPTION II.

I PIERCE the membranous *Septum*, adapt a *Syphon* thereto, and blow as much as poſſible.

I IMMEDIATELY perceive the *Septum* to approach the Navel almoſt to the End of the crucial Inciſion, and which ſeems to be limited to this

this Height through the whole Circumference of the *Abdomen*.

THIS Change happens by the Inflation of the Veſicles of the cellular Texture which ſurrounds the Bladder.

DESCRIPTION III.

I OPEN another Subject after the ſame Manner, and inſtead of blowing into the cellular Texture, I blow up the Bladder which I ſuppoſe to be large; it ſwells, and its Bottom retiring from the *Pubes*, forces back the membranous *Septum* almoſt to the End of the crucial Inciſion, juſt in the ſame Manner as the Inflation of the cellular Texture did in the ſecond Deſcription.

DE-

DESCRIPTION IV.

I COMPLEAT the Inciſion of the *Linea Alba* as far as the *Os Pubis*.

THIS Section ſhews me clearly the cellular Texture which ſurrounds the Bladder, and I perceive there is Space enough to cut thro' the *Linea Alba* according to the high Method, without Fear of opening the *Abdomen*.

IF the Bladder is ſmall, one may ſee the Difference which that makes.

I LIKEWISE ſee that the Veſicles of the cellular Texture, where it covers the Tendons of the Bladder, are fill'd with abundance of Fat.

DESCRIPTION V.

I DESTROY the whole cellular Texture, and clear it away as much as

as poſſible; I open the Bottom of the Bladder, and ſpread its two Sides abroad.

I PERCEIVE its Orifice in the Middle, which is not above two Lines in Diameter. I endeavour to introduce my little Finger, which will not enter but with ſome Difficulty.

DESCRIPTION VI.

I AGAIN cloſe the Bladder, and perceive on the right and left in the *Pelvis* great Part of the two *Levatores Ani*, which ſeem to terminate at its Neck, and one Part of its Body.

IF I thruſt the Neck of the Bladder on the Side of the Arch of the *Pubes*, I extend theſe two Muſcles; on the contrary, if I draw the Bladder a little on the Side of the Belly, putting my Finger

ger at the ſame Time upon the Tendons of the Bladder, I feel their Reſiſtance.

DESCRIPTION VII.

I CUT the Tendons of the Bladder, and ſeparate from the *Oſſa Pubis*, that Portion of the *Levator Ani* which adheres to them. After this I find, preciſely under the *Symphyſis* of the *Os Pubis*, the tranſverſal Ligament which is faſten'd to thoſe two Bones, leaving between it and the *Symphyſis*, a Space thro' which paſs ſome Veſſels. I ſeparate the *Symphyſis*, after which I perceive the Strength of this Ligament, which I cannot break without Difficulty.

DESCRIPTION VIII.

AT preſent we muſt remove Part of the *Oſſa Pubis*, I ſaw them tranſ-

tranſverſally under the *Symphyſis*, and alſo cut the tranſverſal Ligament.

THIS done, I find, at the Small of the Orifice of the Bladder, its Neck, which appears to me (if I take it between my Fingers) a full Inch thick. I perceive muſculous Fibres on both Sides; theſe are thoſe of the *Erectores* which cover the Root of the *Corpora Cavernoſa*.

DESCRIPTION IX.

I DISSECT the whole Canal from the Orifice of the Bladder, half-way down the *Penis*.

BY this Inciſion, I ſee at the Neck, between the *Aponeurotic* Texture, which in reality forms the Canal, and the Membranes which ſurround it, a glandulous Body. Theſe are the *Proſtatæ* which cauſe that Thickneſs I felt be-

between my Fingers, when I thought I only touch'd the Neck. In the Middle of the Inciſion I ſee that which in reality forms the Canal, which being open'd and meaſured, ſhows its Circumference to be about four Lines. It is of a white Colour, which denotes its *Aponeurotic* Nature.

ALMOST in its lower Part is the *Verumontanum*, which I have already mentioned. One may there likewiſe ſee the little Openings that are round it. From the Neck to ſix or ſeven Lines more forward the Canal is ſomewhat larger, this is the membranous Part of the *Urethra*, whoſe Texture is very looſe and not near ſo thick, it is likewiſe of a redder Colour than the Neck, or the reſt of the *Urethra*. On the two Sides I diſcover the Beginning of the *Corpora Cavernoſa*, and ſome fleſhy Fibres which be-

belong to the *Acceleratores* and *Tranſverſalis*.

THE reſt of the Canal is the *Urethra*; it is of an *Aponeurotic* Texture about two or three Lines in Thickneſs, including its ſpongious Texture whoſe little Leaves are ſunk in one upon the other. It is very white like the Neck of the Bladder. To find how great the Strength of this Canal is, I put the End of a *Gorgeret* into that Portion which I have not open'd, and endeavouring to introduce my Finger therein, I meet with an invincible Reſiſtance, which does not give Way but as the Canal tears and opens all along, in Proportion as my Finger advances.

A

VIEW

OF THE

PARTS that either are, or may be concern'd in *Lithotomy*, in obſerving them on the Side of the *Scrotum*.

THE Subject muſt be placed upon his Back, having his Thighs rais'd up, and his Legs folded, as is uſual in performing the Operation of cutting for the Stone.

DESCRIPTION X.

I PIERCE the Skin of the *Scrotum*, adapt a *Syphon* to it, and blow

blow ſtrongly therein. The Air paſſes from Veſicle to Veſicle, filling all the cellular Texture in the *Scrotum* whereof I have ſpoken. If I continue blowing, the Air penetrates as far as the *Perinæum*, and even the *Panniculus Adipoſus* on both Sides of the *Anus*.

DESCRIPTION XI.

I take away the Skin from the Bottom of the *Scrotum* to the *Coccyx*, leaving none of the external Parts but the Margin of the *Anus*. I then remove all that covers the Curvature of the *Urethra* and the Muſcles of theſe Parts; that is to ſay, the cellular Texture juſt before mentioned, which in ſome Subjects is very full of Fat. I put into the *Rectum* ſomething that may be capable of keeping it in order, ſo that the Margin of the

Anus which is no longer ſupported may not change its Place. I likewiſe introduce a Catheter into the Bladder thro' the *Urethra*, and cauſe it to be held in ſuch a Manner, that its Handle may make a right Angle with the Body. This is the Poſition it is in at the Time of cutting for the Stone.

I IMMEDIATELY perceive in the Middle the two *Acceleratores* faſtened to each other, and lying along the *Urethra* which they hide intirely; they deſcribe, on Account of the Situation of the Body, a perpendicular Line from the *Sphincter Ani* to the Height of the lower Part of the *Symphyſis* of the *Oſſa Pubis*. I ſeparate them from each other with the *Scalpel*, and perceive their Faſtenings to the two *Corpora Cavernoſa*. I divide them from the *Sphincter Ani* to which they adhere by their lower

er Part; then I can ſee behind the Bulb of the *Urethra*, which ſeems under my Finger to be twice or thrice as large as the reſt of the Canal.

ON the Side of the *Accelerator* appears the *Erector* which is exactly join'd to the *Os Iſchion*, and that Branch of the *Os Pubis* which is there united to it in order to form the *Foramen Ovalare*. This Muſcle deſcribes a perpendicular Line like the *Accelerator*.

I SEPARATE theſe two Muſcles from each other. Upon dividing them I find Part of the Tranſverſal Muſcle behind, whoſe Fibres cut the Line of Direction. They come from the *Os Iſchion*, and go on to loſe themſelves between the *Rectum* and *Urethra*. One ſees alſo the *Arteria Pudenda* which aſcends along the *Perinæum* between the *Erector* and *Accelerator*,

and which ſends out Branches to the Bulb of the *Urethra* and the *Corpus Cavernoſum*.

A GOOD Finger's Breadth below the Bulb of the *Urethra*, one ſees the Margin of the *Anus* which ſeems protruded outwards, becauſe I have divided the *Acceleratores*, and removed the cellular Texture and the *Sacculus Adipoſus*, which is between the *Sphincter* and the *Urethra*.

BEHIND the Margin of the *Anus* are found fleſhy Fibres which ſurround the *Inteſtinum Rectum*, this is what is call'd the *Sphincter Ani*.

ON both Sides of the Margin I ſee the Tuberoſities of the two *Oſſa Iſchia*.

ON their hinder Part, on each Side, I diſcover in the Cavity the *Arteria Pudenda Interna* which paſſes that Way to reaſcend between the

the *Erector* and *Accelerator*, as I have juſt ſaid. This Artery is join'd pretty exactly to the inner Side of the Tuberoſity. One ſees likewiſe Part of the *Levator Ani*, ſome Fibres whereof confound themſelves with the *Sphincter Ani*, whilſt the other Fibres appear lying round the *Inteſtinum Rectum*.

As I do not in this Parallel diſcourſe of the Manner of extracting the Stone from Women, I judged it unneceſſary to give a Detail of thoſe Parts which, in them, are concern'd in this Operation.

INSTRUMENTS

Which are uſed in the

OPERATION for the STONE.

PLATE III.

FIGURE I. *A Catheter for the common Method.*

A THE Handle.
B The Bending.
C The Groove.
D The Extremity, or the Head.

FIGURE II. *The* Forceps.

A The Branches.
B The Chops.

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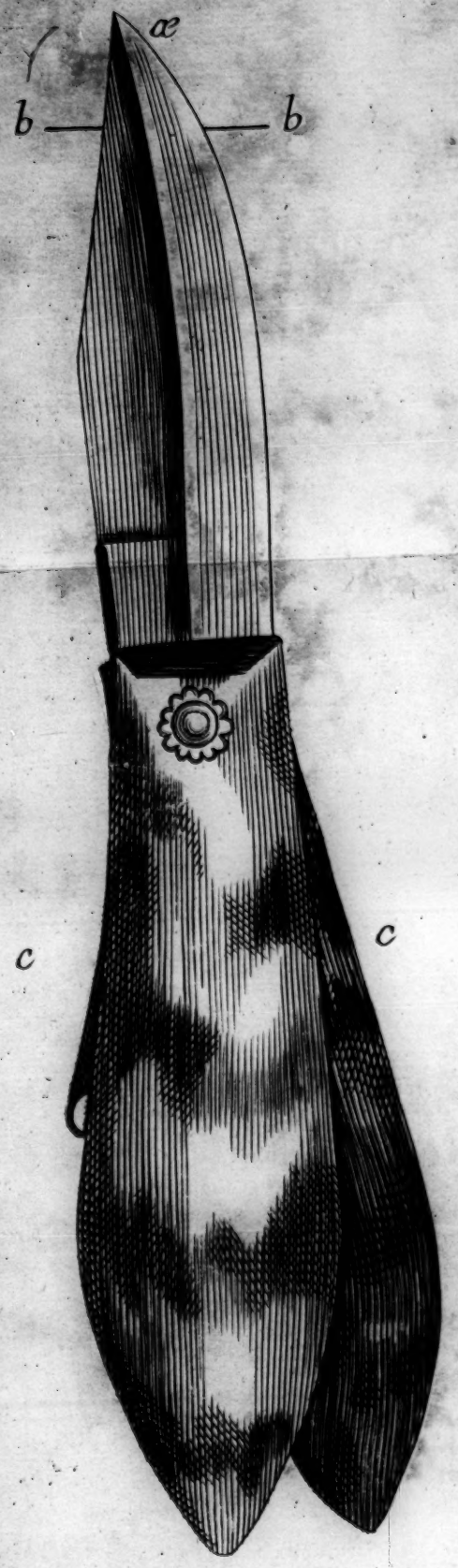

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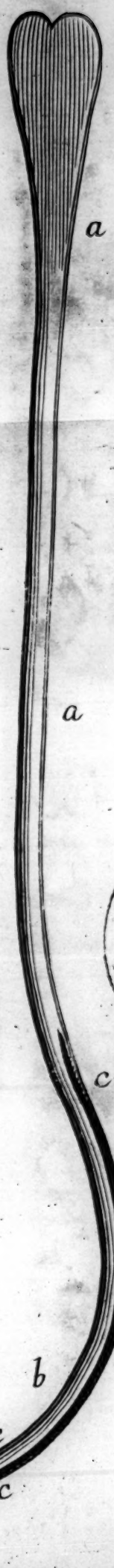

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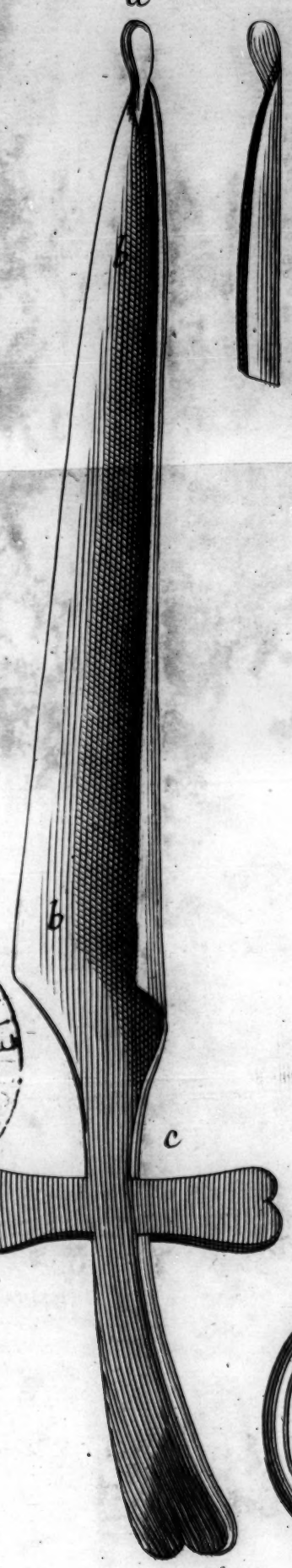

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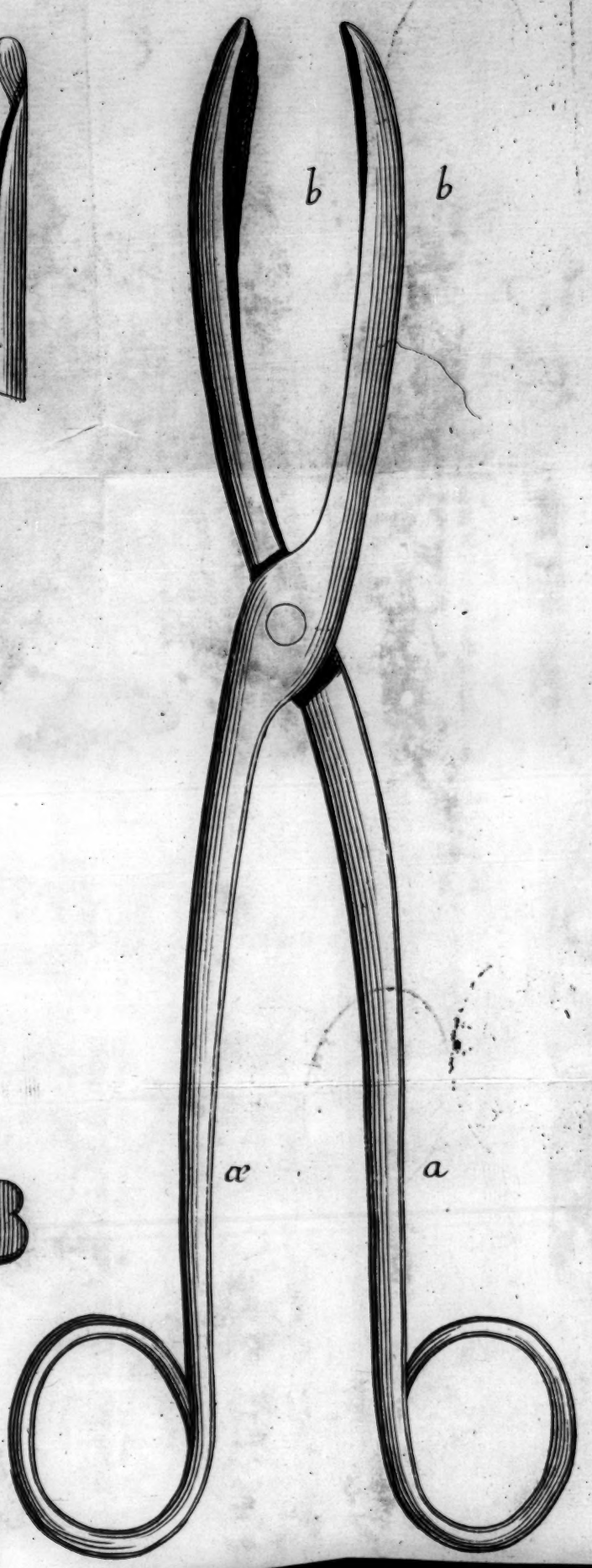

FIGURE III. *The* Gorgeret.

A The Head.
B The Channel.
C The Handle.

FIGURE IV. *The* Lithotome.

A The Point.
B The End of the two Edges.
C The Handle.

PLATE IV.

FIGURE I. *The* Dilators, *the one open and the other ſhut.*

A The Head.
B The Handle.

FIGURE II. *The* Male Conductor.

A The Head. B The

B The Stay.
C The Back.
D The Handle.

FIGURE III. *The* Female Conductor.

A The Head.
B The Stay.
C The Back.
D The Handle.

FIGURE IV. *The* Lithotome *of* M. Colot.

A The Dimenſion of the ſharp Part.

FIGURE V. *The* Lithotome *in Shape of a Carp's Tongue.*

A The Point.
B The End of the two Edges.
C The Handle.

OF

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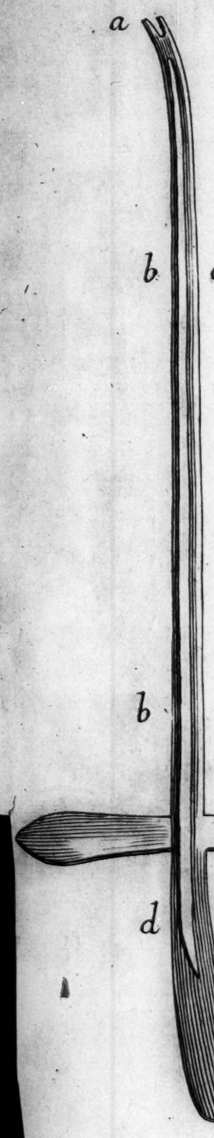

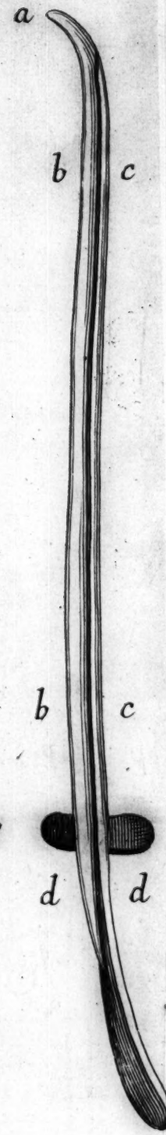

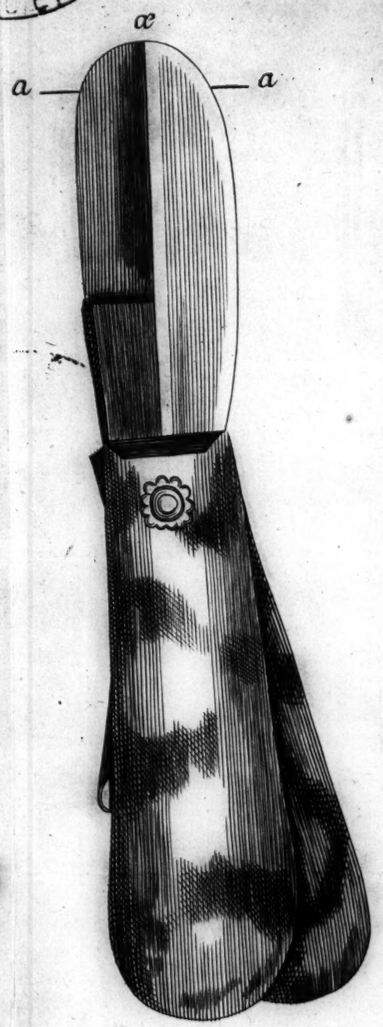

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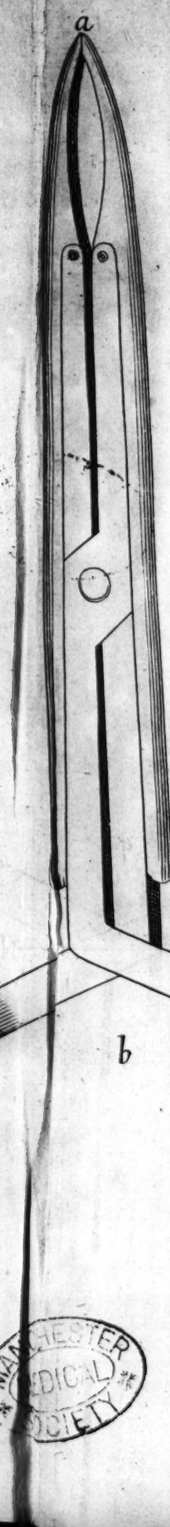

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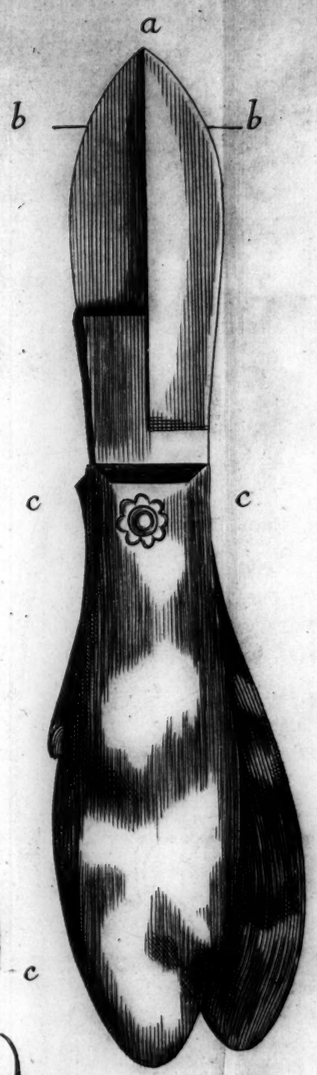

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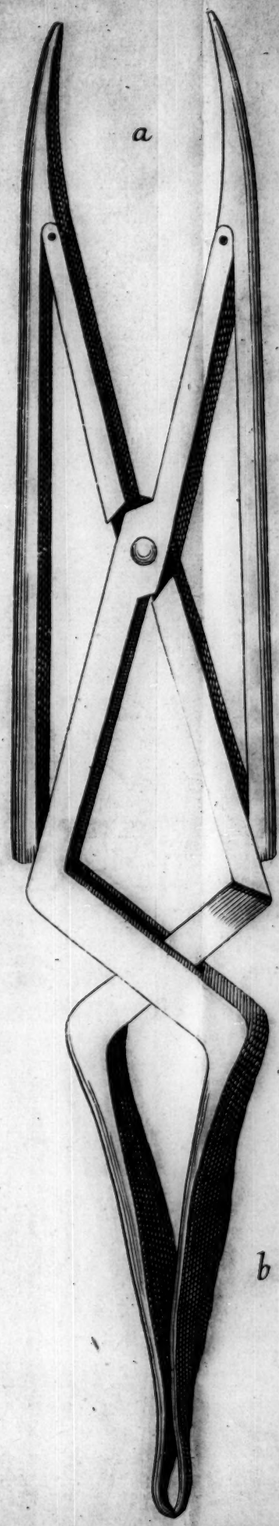

OF THE

Small APPARATUS,

THE ſmall *Apparatus* is an Operation wherein the Stone is extracted by an Inciſion made in the *Perinæum* without the Help of the Staff. This Method can never be uſeful but in extracting a Stone which being already in the *Urethra*, is grown to ſuch a Size there as not to be capable of paſſing thro' the *Penis*, as we often ſee ſmall ones do, which are forced thither by the Urine. There are even few Caſes of this Sort where it is more proper to extract the Stone by this Operation, than by an Inciſion made upon the Staff.

As for thoſe Stones which are in the Bladder, every one knows it is abſolutely pernicious to attempt the Extracting them by the ſmaller *Apparatus*, wherefore I will not compare that with the other Method, neither ſhall I ſo much as deſcribe it.

OF THE

Grand APPARATUS,

OR THE

Common Method.

THE grand *Apparatus* is that Operation whereby we extract a Stone out of the Bladder by an Inciſion made upon the Staff, at the tendinous Part of the *Urethra*, in the *Perinæum* on one Side of the *Raphe*.

THE Method of performing this Operation has differ'd very much in the Hands of thoſe who have practis'd it, and every one has either added to, or retrench'd ſomething from it, according to his own Fancy. I ſhall deſcribe theſe Variations, and chooſing that Manner of

of performing the Operation which I think moſt convenient, I ſhall draw a Parallel between that and the other Methods.

IN performing this Operation, the Patient is placed on the Edge of a firm Table, upon which is fix'd a Chair turned down ſo as to lye aſlaunt which ſerves to ſupport his Back and his Head, the whole being arm'd with a Mattreſs and a Sheet.

THE Inſtruments which are uſed in this Operation are the *Catheter*, or the Staff, the *Lithotome*, two Conductors, the one Male, and the other Female, or in their ſtead the *Gorgeret*, and the *Forceps*. I ſhall only deſcribe thoſe whoſe Figures have varied according to the different Operators; as for the others, I ſuppoſe them to be known as well as their different Parts. They may be ſeen in the Plate hereto annexed.

THE

THE *Lithotome* which the late M. *Colot*, a famous Lithotomiſt, made uſe of, was a full Inch broad, round, and very ſharp at the End, without being ſo on the Sides. Pl. 4. fig. 4.

THAT which has been ſince uſed is not ſo broad, and made in the Shape of a Carp's Tongue, with a round Point and two round Edges. Pl. 4. fig. 5.

THAT which I uſe is pointed, in the Shape of a *Lancette à Grain d'Orge*, and from the Point to the Tongue, one of the Edges deſcribes a right Line. Pl. 3. fig. 4.

IN performing the Operation we ſeat the Patient with his Buttocks upon the Edge of the Table, and lay him back upon the Pillow before deſcribed, ſo that his Body deſcribes a Line between the Perpendicular and the Horizontal; his Legs and Thighs muſt be raiſed up, and his Legs folded. That he may not ſtir, his Hands ſhould be

be faſten'd to his Feet, either with the ordinary Straps or with the Bracelet; to which is join'd a kind of Stirrup which ties the Foot down, and which I have uſed ſome Years. I prefer this to the ordinary Straps, becauſe it is put on in the twinkling of an Eye, and it faſtens the Patient as well as the Straps, whoſe too tedious Preparations before they are fix'd has made me often tremble as much as the Patient. The Operator muſt have a ſufficient Number of Aſſiſtants, to hold the Patient, and aſſiſt himſelf.

I FIRST put the *Catheter* into the Bladder, and when I touch the Stone, I raiſe the *Scrotum*, and cauſe it to be held by an Aſſiſtant who is on one Side of the Patient, and whoſe two fore Fingers being placed at the *Perinæum*, the

the one upon the * *Raphe*, and the other on the left Side along the *Iſchion*, fix the Fleſh and hold it firm that it may be the eaſier cut by the *Lithotome*. This Aſſiſtant who holds the *Scrotum* ought to be handy that he does not bruiſe it.

HOLDING the Handle of the *Catheter* firm in my left Hand, ſo that it may make a right Angle with the Patient's Body, I force the *Perinæum* outwards as much as poſſible with the Bending of the *Catheter* on the Side of the *Raphe*, between the Aſſiſtant Surgeon's two Fore-Fingers. I lean its Head for a Moment upon the *Rectum*, that I may obſerve well at what Place above the *Anus* the Inciſion I am about to make in the Teguments muſt end.

* *Raphe*. Is the Suture which ſeems to ſeparate the *Scrotum* and the *Perinæum* into two equal Parts.

I BEGIN the Inciſion underneath the *Scrotum*; an Inciſion which comprehends the Integuments and the *Urethra*, and continue it almoſt to the Point I have mark'd at the Bottom of the Bending of the *Catheter*. Its Groove ſerves to conduct the Point of the *Lithotome*.

IMMEDIATELY, without ſuffering the Point to ſlip out of the Groove, I raiſe the *Catheter*, and fix its Head under the Arch of the *Pubes* in order to remove the *Urethra* from the *Inteſtinum Rectum*. After this I carry the Point of the *Lithotome* along the Groove pretty forwards towards the Head of the Staff, to cut the Bulb of the *Urethra*, as much as poſſible, without injuring the *Inteſtine*. In prolonging thus the Inciſion under the *Urethra*, the Point of the *Lithotome* muſt not quit the

Groove, and that it may the more eaſily remain therein, one of the Edges of my Inſtrument deſcribes a right Line.

THE Inciſion of the Teguments ought to be pretty large, eſpecially if the Stone is judged to be great, either from the *Catheter* or from the Time the Patient has been afflicted therewith. For this Reaſon, when there is but a little Space between the *Scrotum* and the *Anus*, which generally happens in thoſe whoſe *Scrotum* is large, I carry the Handle of the *Catheter* a little on the Side of the right Groin; this turns its Groove towards the Space between the *Anus* and the Tuberoſity of the *Iſchion*, and on that Side I can prolong the external Inciſion.

M. COLOT did not prolong the Inciſion of the *Urethra* downwards, he did it only at the *Peri-*

næum, parallel to that on the Skin; for which Reaſon he us'd a round *Lithotome*, ſuch as I have deſcribed.

THIS is the only Inciſion that is made in the Operation call'd the grand *Apparatus*, and hitherto there is nothing very fatiguing to the Patient; but what follows is more or leſs painful according to the Dexterity of the *Lithotomiſt*.

AS ſoon as the Inciſion was made, *M. Colot* put into the Groove the male *Conductor*, which he thruſt into the Bladder, he then drew out the *Catheter*, and thruſt a *Dilator* upon the *Conductor*, with which he widened the whole Paſſage. He withdrew the *Dilator*, and immediately adapted the female *Conductor* to the male *Conductor*, that by the Help of theſe two Inſtruments he might introduce a proper *Forceps* into the Bladder, and afterwards extract the Stone.

WE no longer make uſe of the *Dilator*. Some Operators as ſoon as they have made the Inciſion, in the Manner laid down by me, introduce a male *Conductor* into the Groove of the *Catheter*, to which they adapt the Female, and between theſe two Inſtruments paſs a *Forceps* into the Bladder. This *Forceps* in its Paſſage ſeparates the *Conductors* from each other in Proportion to its Size, and that performs the Office of *M. Colot*'s *Dilator*.

OTHERS, who likewiſe make uſe of the *Conductors*, employ them after a different Manner. As ſoon as they have introduced the Male, they turn its Back toward the *Pubes*; along this Back which is poliſhed and exactly embraced by the *Urethra*, and the Neck of the Bladder, they carry the Fore-Finger of their right Hand into the Wound, and endeavour to thruſt

it

it into the Bladder, and widen all the Paſſage. After this they adapt the female *Conductor* to it, and between theſe two Inſtruments they paſs the *Forceps* which is to charge the Stone.

INSTEAD of theſe *Conductors* I make uſe of the *Gorgeret*, which I find more commodious and more uſeful. As ſoon as the Inciſion is made, I paſs the Head of the *Gorgeret* into the Groove of the *Catheter*, and taking care that it does not ſlip out, I ſlide it into the Bladder. I know it is there. 1. Becauſe its Head ſtrikes againſt the End of the *Catheter* which is cloſed up. 2. Becauſe the Urine flows along its Channel. As this Inſtrument grows larger and larger from its Head to its other Extremity, there is but one Inch at moſt which enters into the Bladder eaſily, and without Reſiſtance.

INTO the *Gorgeret*, which I hold with my left Hand I put my right Fore-Finger, and I make it enter ſoftly; the Extremity of this Finger, in Proportion as it advances, ſinks into the Channel and raiſes it ſelf alternately to enlarge the Paſſage, which is done ſucceſſively from Line to Line. Thus the End of the *Urethra*, the Neck of the Bladder, and its Orifice are obliged to give Way by little and little. After this Manner I inlarge the Paſſage more or leſs, according as I preſume the Size of the Stone to be. If this ſucceſſive Introduction was as long in performing as in deſcribing, that would very much prolong the Operation; but ſuppoſing the Space of two Seconds for every Line that is to be dilated, the Slowneſs wherewith I perform it does not prolong the Operation a Quarter of a Minute.

See Proof 5.

WHATEVER Precaution one uſes, the Canal of the *Urethra*, and the Neck of the Bladder, whoſe *Aponeurotic* Texture does not allow them to ſtretch, will rend on that Side which is towards the *Rectum*, upon continuing the Inciſion made in the *Urethra* by the *Lithotome*. Of the neighbouring Parts, ſome Fibres give Way and ſtretch to a certain Degree, whilſt others not ſo capable of yielding break.

THE Dilatation being made as much and as ſlowly as poſſible, I introduce a *Forceps* into the Bladder, by the Help of the ſame *Gorgeret*, which had ſerv'd to guide the Finger; a *Forceps* proportionable to the Size of the Stone.

WHEN it is introduced I open the Chops ſoftly, which ſtill adds to the Dilatation juſt before mention'd. Being open'd I turn them once or twice half round the Bladder,

der, to gather up, if I may ſo ſay, the Stone with one of the Chops if it preſents as it ought, and ſhut them to feel if I have got it; if the Stone does not preſent readily, I muſt, without loſing Time in ſearch of it, draw out the *Forceps*, paſs my Finger again into the Bladder, ſeek the Stone, draw it with my Finger near the Orifice, reintroduce the *Forceps* and charge it. 'Tis propoſed to put the Finger in to the Bladder, even before the *Forceps*, to aſſure one's ſelf of the Place where the Stone lies, and of its Quality and Size. This Thought is very juſt, if before the Beginning of the Operation, on feeling the Stone with the *Catheter*, one has not felt it near the Neck of the Bladder; but if one has felt it there, it would be Time loſt. It might however be uſeful for the chooſing a *Forceps* ſuitable to the Bulk

Bulk and Nature of the Stone.

THE Stone being in the *Forceps*, I endeavour to place it there in ſuch a Manner that it cannot eſcape me. It may be ſoft; wherefore if I ſhut the Rings of the *Forceps*, or if I permit the Chops to approach each other, when charged with the Stone they paſs under the *Pubes*, the Stone will certainly break into Pieces; to prevent this, I take with both Hands the Branches of the *Forceps*, and run ſeveral of my Fingers between them, ſo that at the ſame Time that I hold the Stone faſt enough not to let it looſe, my Fingers which are between the Branches ſupport them, and prevent the Chops from being preſs'd too hard againſt each other. With this Precaution one draws out the Stone entire. In pulling it out I muſt lean upon the *Rectum*, I muſt pull from above downwards, following

lowing the Direction of the Arch made by the *Oſſa Pubis*, and muſt turn the Chops of the *Forceps* the one on the Side of the *Rectum*, and the other on the Side of the *Symphyſis*. This Precaution is ſo much the more neceſſary, inaſmuch as the Inciſion made in the *Urethra* by the *Lithotome* being underneath, the Rent which has ſince been made the whole Length of the Canal is on the Side of the *Rectum*. I muſt therefore to take care of the Wound, and not irritate it by the Inequality of the Stone, turn the Back of one of the Chops, which is ſmooth and poliſhed on that Side. See Proof 5.

'Tis of theſe forced Dilatations juſt mentioned, and which are inſeparable from the common Method, that Complaints have been ſo often made; and 'tis only to avoid them that ſeveral Practitioners have ſearch'd after other Me-

Methods of extracting the Stone. But is it this they ought to complain of? Is it not rather of the Manner after which they have been often made? Without pretending to extol the common Method above the others of which I ſhall enter into a Detail, let me be permitted to make an Apology for it, ſince it has been adopted before me by ſo many eminent Surgeons who have never left it, and who by it have ſaved the Lives of ſo many Patients. Let me be allowed to defend it, ſince in 1728 and 1729, of ſixteen Patients whom I publickly cut for the Stone in the *Charity*, from ſeveral of whom I extracted Stones of ſix and eight Ounces in Weight, there is not one but is perfectly recover'd. It is however true that I have ſeen ſeveral Patients dye, ſome ſooner, others later, after the Operation; but

but beſides that the Death of ſome of them may be imputed to their Conſtitutions, or to ſome particular vicious Habit, ſuch as the Bladder often contracts in like Caſes, there would not be wanting Examples of the Operator's having contributed thereto, by his Manner of performing it.

GOD forbid that I ſhould in the leaſt detract from the Merit of thoſe who at preſent undertake to perform this Operation; but I cannot excuſe my ſelf from giving an Account of the Faults they may commit in practiſing it. I ought to do it, not only to ſhew that they are abſolutely foreign to the common Method, altho' they have always been imputed to it, but alſo to engage the *Lithotomiſts* who ſhall ſucceed me to avoid them. Their general Source is oftentimes not ſo much the Ignorance of the Operator,

tor, as the Precipitation wherewith he goes to work. The Deſire he has to ſee his Patient ſpeedily delivered from the Pain to which he puts him, and it may be likewiſe the Pleaſure he propoſes to himſelf, and which a little Vanity ſuggeſts, of finiſhing his Operation almoſt as ſoon as he has begun it, divert his Attention from Things which are eſſential to be obſerved in the manual Part, and being more intent upon finiſhing than doing well, his Hand goes too quick for his Reflexion. This would not happen if in performing the Operation he knew how to keep himſelf thoroughly calm and compoſed, and if he took for his Rule this antient and juſt Maxim, *Sat cito qui ſat benè.* For in ſhort a Patient ſuffers himſelf to be cut but to preſerve his Days, and live without Pain and Inconveniences; if he knew

that

that in working with ſo much Precipitation he was expoſed to periſh, he would ceaſe to judge like the Publick, who counting only the Minutes that an Operation laſts, eſteem it but as it is very ſpeedily finiſh'd; and he would recommend it above all Things to the Operator to do his Work ſlowly, having very little Inclination to be a Victim to that ridiculous Honour upon which a *Lithotomiſt* might value himſelf, of performing this Operation in a Minute.

I RETURN now to the Operation in order to follow it through all its Circumſtances.

THE Patient being placed to be cut, and the Staff introduced into the Bladder, the Operator cauſes the *Scrotum* to be held up by an Aſſiſtant Surgeon; this is the firſt Source of Accidents. How often has this Aſſiſtant for want of Judg-

ment

ment compreſs'd one or the other Teſticle; and bruis'd the *Scrotum*, which has been follow'd by a conſiderable *Ecchymoſis*, or an Inflammation, to which numberleſs Impoſthumes, and ſometimes a Gangrene has ſucceeded.

THE ſame Accidents happen again ſometimes by a Defect in the Inciſion. The Operator, who ought not to extend it higher than the *Perinæum*, reſolving to make it large enough, comprehends therein the lower Part of the *Scrotum*; then its cellular Texture will be inflamed, which occaſions Suppurations therein, and which may be accompanied by a Reflux of purulent Matter; Experience has taught me the Danger hereof.

THIS Inciſion ought to be proportional to the Bulk of the Stone. If it is not, the Stone in coming out draws the Skin outwards: Then the

the cellular Texture which is at the *Perinæum*, round the Bending of the *Urethra*, ſuffers a violent Extenſion, and even a Dilaceration; another Source of Accidents.

I HAVE ſaid that in cutting the *Urethra* on its lower Side, one muſt raiſe the Staff, and fix its Head under the *Symphyſis* of the *Oſſa Pubis*, to keep as far as poſſible from the *Rectum*. How many Times, for want of this Attention, has the *Rectum* been open'd by the Edge of the *Lithotome!*

AS ſoon as the Inciſion is made, the Operator by the Help of the *Catheter* introduces the male *Conductor*, or elſe a *Gorgeret*. Herein I have ſeen a very conſiderable Fault committed. The *Catheter* is channelled to the End, only to conduct the Head of theſe Inſtruments ſurely into the Bladder. A *Lithotomiſt* who lowers the Han-

dle of the *Catheter* towards himſelf, which ought always to make near a right Angle with the Patient's Body, raiſes its Head by this Motion, which neceſſarily quits the *Conductor*; then this Inſtrument which has no longer any Thing to direct it, is thruſt between the *Rectum* and the Bladder, as far as the cellular Texture which ſurrounds it, ſometimes even into the Belly, and the Patient's Life is greatly endangered. This irregular and inconſiderate Motion may be ſo quick, that the Fault is committed before the Aſſiſtants can prevent it.

See Exper. 1. and 2.

I SUPPOSE the two *Conductors* introduced dextrouſly into the Bladder. Some Operators thruſt the *Dilator* between them; then all that Portion of the *Urethra* which is between the *Perinæum* and the Neck of the Bladder, the Neck

it

it ſelf and the Orifice, which makes about two Inches of a tendinous and very ſtrong Canal, are torn together; what a dreadful Pain muſt this be to a Patient! Others uſe the *Forceps*, which they thruſt between the two *Conductors*; this Dilatation produces almoſt the ſame Effect.

OTHERS having introduced the male *Conductor*, turn it in ſuch a Manner, that its Back is to the *Pubes*, and upon the Back of the Inſtrument endeavour to carry their Fore-Finger into the Bladder. Upon conſidering after what Manner the *Urethra* and the Neck embrace it, it is evidently impoſſible to paſs the Finger between them both, and if the Finger does paſs, it muſt be by the Deſtruction of all that is in the Paſſage. This Inſtrument not only does not facilitate the Introduction of the Finger, but is even

See Exper. 3.

even very dangerous on Account of its Figure; for it cannot have its Back turn'd upon the *Pubes*, but its Head which is in the Bladder muſt incline downwards upon that Portion of this *Viſcus* which is join'd to the *Rectum*; and it hurts it the more, inaſmuch as the Finger muſt preſs upon its Back to make itſelf a Paſſage.

OTHERS in fine make uſe of a *Gorgeret* to introduce their Finger by the Help of its Channel, and inlarge the whole Paſſage thro' which the Stone is to come out.

WHICH ever of theſe Methods is choſen to make the Dilatation, it cannot be accompliſh'd without opening the whole Canal along the Side of the *Rectum*. Knowing the Nature of the Parts which form it, I am very ſenſible that the Pain which reſults from thence muſt be very acute, and that the Conſequence

quence may be an Inflammation; but ſince notwithſtanding this, the common Method has generally been attended with Succeſs; let us ſee if the Manner of making this Dilatation may not be leſs dangerous in ſome Operators than in others.

SOME of them perform it very quick; others more ſlowly; and in my Opinion theſe laſt do the beſt. The Finger being lubricated with Oil, and introduced ſlowly into the Channel of the *Gorgeret*, the Diviſion that has been made in the *Urethra* by the *Lithotome*, is no leſs continued to the Orifice of the Bladder, and ſometimes even beyond it; but every Line of the Canal is ſeparated the one after the other; thus one very acute Pain is divided into ſo many ſlight Pains as there are Points of Dilatation. Beſides it is only the Tendinous Fibres which break, becauſe they

reſiſt, the others give Way by Degrees and lengthen very much, becauſe there is no ſoft Part but will yield to a ſlow Extenſion. With this Precaution one goes on in an even Way and without any Dilaceration; but if the Operator introduces his Finger rudely and without any Conſideration, all the tendinous Fibres that are in the Paſſage, inſtead of giving Way one after another, break altogether, and even the ſofteſt Fibres which would only ſtretch, break alſo.

See Exper. 5.

FURTHER, the Neck of the Bladder which reſiſts becauſe it is ſtraiter, and of a firmer Texture than the membranous Part of the *Urethra*, is puſh'd forcibly back towards the Bottom, when it often ſeparates it ſelf from the reſt of the *Urethra* which is dilacerated; the two Tendons of the Bladder are vi-

violently extended; the cellular Texture which ſurrounds them, and that Part of the *Levator Ani*, which is both faſten'd to the Side of the Arch and the Neck of the Bladder, ſuffers the ſame Diſtenſion; this Muſcle may be likewiſe in part ſeparated from the *Os Pubis*; of which an Inflammation upon theſe Parts is the neceſſary Conſequence, and Putrefaction inevitably follows, or Abſceſſes without Number.

I HAVE often experienced upon *Cadavera* the Effect which a haſty or gradual Introduction of the Finger produces upon the Parts; the one preſerves, the other deſtroys them. 'Tis perhaps upon this alone that the Succeſs of the Operation often depends.

THE *Forceps* is at laſt introduced into the Bladder; and happy is the Patient if the Operator is ſo atten-

tive as not to thruſt it with too much haſt, and ſo forward as to ſtrike it againſt the Bottom of this *Viſcus*.

HE opens the *Forceps*, and finds more or leſs Difficulty in ſo doing according as the Bladder is larger or ſmaller. If he opens it precipitately, the Bladder being forcibly dilated, will ſuffer much more than if he extends it inſenſibly.

THERE is another Thing wherein one ought always to be careful, becauſe it is of very great Conſequence. The Patient cries, eſpecially if it be a Child; if in cloſing the *Forceps*, we do not obſerve the Time when he takes his Breath, and we cloſe it when he cries (they who know what paſſes in the different Motion of our Machine, know that at that Inſtant the Bottom of the Bladder is puſh'd down towards its Neck) then it may be taken be-

tween

tween the Chops of the *Forceps*; what an Outrage upon this *Viſcus!* May not an Inflammation upon this Part together with the cellular Texture which ſurrounds it, and even the Death of the Patient be the Conſequence?

THE Stone being in the *Forceps* and charg'd as it ought to be, but ſo ſoft as that it will eaſily break into Pieces; if the Operator, fearing leſt it ſhould eſcape him, ſhould ſhut the Branches of the *Forceps* too hard; or if he ſhould not bear them up ſo as to prevent the Chops from approaching each other when the Stone paſſes thro' the narrow Paſſage of the *Oſſa Pubis*; he muſt then again introduce the *Forceps* ſeveral Times into the Bladder, to take the Pieces away ſeparately: Another Fatigue to this and to the other Parts which have already ſuffered.

IN fine, it is impoſſible for the Operator not to tear theſe Parts afreſh by ſome ill Management, if he ſhould turn the *Forceps* and the Stone about inceſſantly in extracting it; which Motion would be ſtill more pernicious, if the Stone be charged with a crooked *Forceps*.

HOW many Faults are here, which may all prove vaſtly prejudicial to the Patient, and which yet ought not to be imputed to the common Method, ſince it is as eaſy as neceſſary to avoid them in the Operation.

LET us at preſent abſtract theſe Faults from it, and examine what are the Inconveniencies to which it is liable, and which are inſeparable from it.

OF THE

INCONVENIENCIES

OF THE

Common Method.

I See but two Things which can, and which ought to happen in this Operation. The firſt is the Opening of the Branch which proceeds from the internal *Arteria Pudenda*, and which croſſing the *Perinæum* loſes itſelf in the Bulb and in the ſpongious Texture of the *Urethra*; and tho' this may be avoided, I ſuppoſe it neceſſary, and that on Account of the Variety which is found in the Poſition of the Veſſels; the Opening of an *Artery* is of no great Con-

Conſequence, but when we cannot ſtop the Blood, or when in ſtopping it we deprive a Part of it, which receives no other Branch for its Nouriſhment. That which one may open here is not in the ſame Condition, and one may ſtanch the Blood, either by Compreſſion alone, or with a Ligature, or ſome ſtyptic Water; thus this Inconvenience ought only to be eſteem'd ſuch in that it may prolong the manual Part of the Operation. The ſecond is the forcible Rending of a Portion of the *Urethra*, the Neck of the Bladder, as likewiſe its Orifice, and the *Proſtatæ*, in extracting a large Stone. I do not ſpeak of the Dilaceration which may be made in all theſe Parts, becauſe that ought never to be done; I only ſpeak of a ſufficient Opening, made ſlowly and gradually, as I have propoſed it.

I own this is painful; but I ſay at the ſame Time the Pain is not ſo great, nor the Conſequences ſo much to be fear'd, when it is perform'd as it ought to be. This Truth may eaſily be deduced from the Number of thoſe who owe their Lives to this Method practis'd according to the Rules of Art; and the Regiſters of the *Charity*, and *Hotel Dieu* for the Years 1727, 1728, and 1729, are Proofs thereof. Theſe Regiſters do not agree with what is inſinuated and even advanced in ſeveral Libels which have appear'd within theſe few Years; Libels which being publiſh'd under ſpecious Titles ſeem to have no other Deſign but to decry the common Method, or thoſe who practiſe it. It is certain however that theſe Regiſters cannot be ſuſpected of Falſhood.

IT is not then to the manual Part in the grand *Apparatus*, nor to the forcible Diviſion of the tendinous Parts, or to the Extenſion of the ſofter Parts, or the Pain, that the Accidents which ſometimes happen in that Operation muſt be attributed: And one might almoſt aver that whenever any has happen'd (if the Subject was good and the Bladder ſound) there muſt have been ſome conſiderable Dilaceration which has brought on a more or leſs ſpeedy, and more or leſs violent Inflammation.

IT may be objected that a moderate Aperture, ſuch as may be made with the Finger, is not ſufficient for the Paſſage of a large Stone, to the Bulk whereof muſt be added that of the *Forceps* which holds it; and that then the Stone in coming out (whatever Precaution may be taken) tears all that has been

been preſerved; that the *Proſtatæ* muſt be neceſſarily contus'd, and often ſeparated from the Neck, as if they had been diſſected, as may be ſeen in the Experiments I have given in this Book; and that therefore the Dilaceration is always the Conſequence of this Operation in whatever Method it be perform'd. I confeſs that whatever Way one takes it is impoſſible to prepare a Paſſage proportional to the Diameter of a large Stone; and that in extracting it, its Bulk will neceſſarily inlarge the Opening of the Neck of the Bladder, as may be ſeen in Experiments 8 and 9; but muſt we thence conclude that the Manner of making the Dilatation is an indifferent Thing? If the Stone in coming out cauſed in the *Urethra* a Dilaceration equal to that which is made by the careleſs Introduction of the Inſtruments or the Finger;

if

if, as it then happens, the Neck of the Bladder were forcibly thruſt towards its Bottom, to the Detriment of its Tendons, and the cellular Texture which ſurrounds them, we might as well truſt to the Size of the Stone for the Dilatation, as to do it with the Caution I require; but the coming out of a large Stone prudently extracted, makes hardly any Alteration in the State of the divided *Urethra*; it only inlarges towards the Bottom of the Bladder, that Opening which has been made at its Neck; or when it does not make this Diviſion, it only cauſes a diſplacing of the Neck, in Conſequence whereof the *Proſtata* is uncover'd and as it it were diſſected; this is a ſufficient Misfortune, which is neceſſary or rather indiſpenſable in following the common Method, without adding a Dilaceration

See Exper. 9.

which

which may be avoided. If one is fortunate enough to prevent the Inflammation, all theſe Parts come to a Suppuration, approach each other, and cicatrize as well as other Wounds, which it is difficult to obtain after a great Dilaceration. In ſhort the Care of good *Lithotomiſts* has been ſo often favour'd with Succeſs (as has already been obſerv'd) that we may hope they will ſtill meet with the ſame good Fortune.

'TIS true that after the Extraction of a very large Stone, the Patient may be afflicted with an Incontinency of Urine; but that may not be impoſſible to be remedied.

I HAVE experienced it in two Patients whom I cut in 1728 in the *Charity*, and from whom I brought away Stones between ſix and eight Ounces in Weight, each of which is

five Inches and ten Lines in Circumference. One was intirely cured in leſs than three Months, not having been troubled with an Incontinence of Urine above a Fortnight; and the other who was cured in the ſame Time, return'd into his own Country with an Incontinency of Urine; which Inconvenience continued but eight Months, according to the Account of one of his Relations, who arriving at *Paris* at the Expiration of that Time, came to *la Charité* to inform us.

IT is likewiſe true that ſome Patients have remain'd *Fiſtulous*; but this never happens but in two or three Caſes; as when there has been a very great Dilaceration; when to extract large Pieces of a broken Stone, or to make a diſtemper'd Bladder ſuppurate, they have been obliged to leave a *Cannula* a long

a long Time in the Bladder; or in fine when the Patients have been much wasted during the Course of their Cure.

ALMOST all these *Fistulæ* may be cured, when the Patient recovers his Flesh.

THE

ADVANTAGES

OF THE

Common Method.

LET the Bladder be large or small, let it be sound or distemper'd, let the Stone be great or small, let it be hard or soft, unless it be of too exorbitant a Size, the grand *Apparatus* may be always

practis'd, ſuppoſing the Surgeon has not accuſtom'd himſelf to any other Method.

IF thro' Misfortune or want of Care the Stone has been broken in extracting it, one may eaſily re-introduce the *Forceps* to draw out the large Pieces; the ſmall ones and the Gravel will readily paſs off with the Urine.

IF in order to wait till the Pieces of a broken Stone preſent themſelves to the Paſſage by the Suppuration, or if to make a diſtemper'd Bladder ſuppurate, and make Injections into it in the Courſe of the Cure, it is judged proper to leave a *Cannula* in the Wound which penetrates into the Bladder, it is eaſy to put it there, and change it as often as is neceſſary.

IF in order not to fatigue a diſtemper'd Bladder, it is judg'd proper to leave the Stone there, as I have

have ſeen done by a great Man of our Age, who in this Caſe waited till the Bladder was relax'd by the Suppuration to make the Extraction, the Paſſage remains always open and eaſy to introduce a *Forceps*.

IN fine, the Parts which have only given Way, recover their Elaſticity, and thoſe which have been cut, as the *Urethra*, the Neck of the Bladder, its Orifice, and the *Proſtatæ*, ſuppurate and cicatrize.

OF THE

High METHOD.

THEY call that Operation the high Method, by which the Stone is extracted out of the Bladder, by an Inciſion made at its Bottom, at that Part of the *Pubes* which is above the Root of the *Penis*.

SOME have believ'd (we ſhall ſee if with any Foundation) that this Method is eaſier to be practis'd than any other. Beſides, it is not ſo hazardous to the Life of the Patient; and is not liable to leave *Fiſtulæ* at the *Perinæum*, or an Incontinence of Urine. 'Tis perhaps for theſe Reaſons that it has been oftentimes propoſed by great Surgeons; but theſe able Maſters

Maſters, after ſeveral Experiments made upon dead Bodies, have refuſed to adopt it, in ſpite of the repeated Inſtances that have been made to them at different Times. This has not prevented Mr. *Douglas*, a celebrated Surgeon at *London*, and ſome others of the ſame Country, from practiſing it for a certain Time, after which they have quitted it. Whatever their Reaſons may be, here is an exact Account of this Operation, and the Reader may judge for himſelf.

THEY place the Patient upon the Foot of a Bed, with the Legs folded, and faſten'd to his two Bed-poſts, or held very ſteady by ſome Aſſiſtant Surgeons, his Head and Breaſt ought to be rais'd a little with Pillows, that the Muſcles of the *Abdomen* may not be extended.

Deſcription 3.

BY the Help of an *Algaly* * which they introduce into the Bladder, they inject into it a ſufficient Quantity of warm Water to fill it, ſo that it may be felt above the *Pubes*. When they can feel the Roundneſs thro' the Skin, they draw out the *Algaly*, and prevent the Water which has been injected from running out; if one would not have this Injection prove painful, it muſt be done ſlowly, to imitate Nature as much as poſſible, who fills the Bladder Drop by Drop, becauſe its Fibres cannot ſuffer a ſtrong and ſudden Extenſion without Pain.

THIS done, they make immediately above the *Pubes* † a longi-

* *Algaly*. Is a ſilver *Catheter* hollowed like that which is deſign'd to draw the Urine out of the Bladder.

† *Pubes*. Is that Part which about the Age of 14 is cover'd with Hair above the Root of the *Penis*, and exactly over the *Os Pubis*.

tudinal

tudinal Inciſion anſwering to the *Linea Alba*; an Inciſion which beginning at a Finger's Breadth above the Root of the *Penis*, extends four or five Fingers Breadth on the Side of the Navel. As yet they cut only the Fleſh and the Fat.

THIS firſt Inciſion being made, and ſufficiently large, the Operator continues it thro' the Depth of the Wound already made, and cuts the *Linea Alba*; hereby he diſcovers the Bottom of the Bladder, which being diſtended on the Side of the *Abdomen*, muſt neceſſarily ſhew itſelf, as I have prov'd in Deſcription 3. Pl. 2. fig. 2. A.

THEN the Operator plunges in the Point of a ſtrait *Biſtory*, with its Edge turn'd towards the *Oſſa Pubis*, and cuts the Bladder as he has cut the *Linea Alba*, that is to ſay according to the ſame Direction. It may be obſerv'd, *en Paſſant*, that

that there are good Reaſons to make the Inciſion in the Bladder tranſverſely, which is very eaſy. Others adviſe the beginning it on the Side of the *Oſſa Pubis*, to continue it under the Arch form'd by theſe two Bones.

As ſoon as the Operator can get the Fore-Finger of his left Hand into the Bladder, he puts it there to ſupport its Bottom, whilſt he continues the Inciſion, if it be neceſſary, towards the Neck under the Arch made by the *Oſſa Pubis*. Immediately iſſues out a Part of the Water that is in the Bladder, but enough ſtays behind to keep its Sides ſeparated from each other; all that now remains is to extract the Stone.

THE Operator ſtill ſupporting the Bottom of the Bladder with his left Fore-Finger, introduces a *Forceps* into its Cavity, or the Fore and Middle-Finger of his right

right Hand, and takes hold of the Stone which comes out very eaſily, if Care has been taken to make the Inciſion on the *Linea Alba* large enough. The Bladder and the cellular Texture which ſurrounds it eaſily yield to the Bigneſs of the Stone, but the *Aponeurotic* Texture of the *Linea Alba* will not do the ſame, but will tear like the *Urethra* in the common Method, if its Aperture is not proportioned to the Size of the Stone.

THIS Operation, and the two lateral ones of *M. Rau*, and Mr. *Cheſelden* which I ſhall hereafter deſcribe, are no more exempted, than the common Method, from the Danger that may depend upon the working of an Operator; but to give an exact Account of the Faults which may be committed therein, and that perhaps have been committed by thoſe who were

were willing to imitate M. *Rau*, and M. *Cheſelden*, it would be neceſſary to have ſeen thoſe work who have follow'd theſe Methods. In ſhort, I had not enter'd upon ſuch a Detail, after having deſcribed the manual Part of the common Method, but to ſhew how the moſt eaſy Things may be ill perform'd, and at the ſame Time clear each of theſe Methods of what ought only to be imputed to the Operator. Wherefore I will not ſtop at theſe Accounts, but after having deſcribed each of theſe Operations, will paſs on directly to the Inconveniences which are inſeparable from them.

OF

OF THE

INCONVENIENCES OF THE High Method.

IS it always poſſible to inject Liquor enough? Suppoſing the Bladder ſound, and even large enough, would that hinder the muſculous Fibres in contracting themſelves, from reſiſting in concert with the membranous and tendinous Fibres, the Introduction of that Liquid which is to extend them. The Truth is, that the Difficulty wherewith the Operator thruſts in the Piſton of the Syringe, and

and the Cries of the Patient, by Reaſon of a ſudden, and conſequently painful Extenſion, have more than once ſtopt the Injection. But, they will ſay, the Bladder is made to be dilated, wherefore it may be done. We muſt diſtinguiſh; the Bladder is made to be dilated, but this muſt be done gradually, and only to a certain Degree: Thus the Urine which ordinarily dilates it, enters therein only Drop by Drop, in Proportion as it is ſeparated from the Blood by the Kidneys, and extends it but as much as its natural Elaſticity will allow: Whereas the Quantity of the Injection which is neceſſary to ſwell it ſufficiently before the Operation, makes a haſty and immoderate Extenſion.

THIS Dilatation then may be attended with two Inconveniences; either it will not be ſufficient, be-

becauſe the Reſiſtance of the Bladder, and the Pain the Patient feels in Conſequence thereof, may have prevented the Injection, and then they will run the Riſque of opening the *Abdomen* (as has happen'd more than once) above the *Septum* which incloſes the Bladder in the *Pelvis*; or elſe they may have made it ſufficient notwithſtanding the Cries of the Patient, and thereby have depriv'd the Fibres of the Bladder of their Elaſticity, and it will remain Paralytic.

IT was perhaps that he might the better judge of its Dilatation, and not puſh the Injection too far, that a certain Practicioner propoſes to begin by the Inciſion of the Integuments, and afterwards make the Injection, which muſt be ended as ſoon as the Arch made by the Bladder can be felt ſufficiently above the *Pubes*. But if the Bladder be of

a Nature not to be dilated, the Patient will have undergone the Pain of an Inciſion to no Purpoſe, and have two Diſtempers inſtead of one; *viz.* A Wound in the Belly, and a Stone in the Bladder; for the Extraction whereof it will be neceſſary to perform another Operation, that is to ſay, follow another Method.

IN vain do they reply that this Inconvenience may be prevented; 1. Becauſe one may judge by the Quantity of Urine which the Patient generally retains, if the Bladder be ſuſceptible of Dilatation. 2. Becauſe one need only ſuffer the Bladder to be ſufficiently fill'd by the Urine itſelf, inſtead of an Injection, and not cut the Patient till it is full. Daily Experience ſhows us, that thoſe who have the Stone, if it be of any Size, make Water every Moment: Therefore it is ſeldom poſſible to form a ſound Judgment,

by

by the Quantity of Urine which Patients void at each Time, what Quantity of Liquor their Bladders can contain; and by the ſame Reaſon, it is ſeldom poſſible to let this *Viſcus* fill itſelf ſufficiently to make an Arch above the *Oſſa Pubis*.

AFTER all, we muſt agree that there are Bladders naturally large, ſuch eſpecially are thoſe of Children, which may ſuffer a ſufficient Dilatation, without the Patient's enduring much by the making of the Injection. But then, ſuppoſing even the Bladder large enough, and capable of ſtretching, one muſt, to cauſe as little Pain as poſſible, make the Injection ſlowly, and that very much prolongs the Operation.

SUPPOSING always a large Bladder, I ſay there are ſome Stones very difficult to be taken hold on, ſuch as, for Example, in

a fat Man, would be a ſoft light Stone, no larger than a ſmall Nut; it would continually ſlip from the *Forceps*, and fluctuate in the Water that fills the Bladder. It would perhaps be more eaſy to take it with two Fingers, but with the Corpulency which I ſuppoſe in the Patient, one cannot introduce the Fingers far enough into the Bladder, without preſſing in that Side of the Bladder where the Inciſion is, towards the oppoſite Side; and this could not be done but at the Expence of that Part of the cellular Texture which faſtens the Bladder to the Sheath of the *Recti* and the *Linea Alba*.

SUPPOSING at preſent the Stone to be of the Size of a ſmall Pea, ſuch as I have ſeen found with ſome that have been larger, it will not be felt, or if felt, perhaps impoſſible to be taken hold of on Account

of

of its Smallneſs, and the Patient will remain with one Stone.

IF one has had the Misfortune to crumble the Stone in Pieces, as it is difficult not to do with ſome which will break with the leaſt touch, one cannot draw out the Fragments.

IF there are any *Fungi* * in the Bladder, one cannot eaſily come at them to looſen them.

IN fine, if one is obliged to make the Bladder ſuppurate, let it be for what Reaſon it will, the Thing is impoſſible. One may indeed make the proper Injections, but they will not come out eaſily.

SUPPOSING at preſent the Bladder naturally ſmall, is not that the Caſe of the ſecond Inconvenience whereof we have ſpoken? Upon this Suppoſition will it be poſſible

* *Fungus.* Is an Excreſcence in the Shape of a Muſhroom.

to diſtend this *Viſcus* ſufficiently for it to make an Arch above the *Pubes?* Muſt one make this Part loſe its Elaſticity, and by over-ſtretching it render it Paralytic?

SUPPOSING it ſmall, from its not being accuſtom'd to undergo that Extenſion for which Nature deſign'd it, (for the Bladder of thoſe Patients who make Urine every Moment, being never full, its Fibres are in an habitual Contraction which ſhrinks them ſo as not to be any longer capable of being extended) ſuppoſing it ſmall then for this Reaſon, is it not viſible that the Injection can never extend it, and that it will be abſolutely impoſſible to perform the Operation?

IT would be yet leſs poſſible if the Bladder is diſtemper'd, as are almoſt all thoſe who have been a long Time fatigued with a large Stone. In theſe three laſt Caſes, the

the Condition of the Bladder not allowing it to yield to the Injection, it will remain incloſed in the *Pelvis* under the *Os Pubis*, the Expanſion of the *Peritonæum* will continue, join'd to the *Pubes*, and if one ſhould open the *Linea Alba*, thinking to find the Bladder under it, one ſhould find one's ſelf in the Cavity of the *Abdomen* where it is not.

HERE are ſeveral different Caſes. In ſome that I have propoſed, the Largeneſs of the Bladder is not a ſufficient Reaſon to determine the Operator to practiſe the high Method; and always the Smallneſs of its Capacity, whether it be natural or accidental, renders this Operation impracticable.

THE ADVANTAGES OF THE High Way.

NO one Inconvenience attends the Operation of the high Method; and the whole turns only upon the Uſeleſneſs or Impoſſibility of making this Operation in the Caſes which I have propoſed; now here are ſome wherein it is very proper.

IF the Bladder be naturally large, and ſhould not yet have ſuffer'd enough to cauſe in the Patient ſuch a frequent Inclination to urine as almoſt always attends large Stones,

Stones, the Injection is practicable, and the Bladder projecting out above the *Pubes* may be open'd without Difficulty becauſe it is in the Surgeon's reach; it may likewiſe be open'd without Danger, becauſe there are no Veſſels to be fear'd in making the Inciſion, and becauſe the Expanſion of the *Peritonæum*, which ſeparates the Bladder from the *Abdomen*, is thruſt back on the Side of the Navel.

IF at the ſame Time the Stone be of a ſufficient Largeneſs to be eaſily taken hold on, it comes out without Difficulty, provided it likewiſe have Conſiſtence enough not to break in Pieces upon touching.

IF theſe ſeveral Circumſtances concur, the high Operation is an excellent Method to follow for the ſubſequent Reaſons; 1. the *Urethra*, the Neck of the Bladder, and its

its Orifice remain entire, and do not ſuffer in any Manner. 2. The *Proſtatæ* are neither bruiſed, cut, or denudated, as they are in the Operation of M. *Cheſelden* and in the common Method, which may be the Occaſion of the *Fiſtulæ* which ſometimes follow theſe Operations. 3. The Wound in the Bladder may be ſoon cloſed in the ſame Manner as a ſimple Wound, eſpecially if Care be taken that it be not wetted after the Operation, either by the Water which has been injected, or by the Urine, which is very eaſy by taking the proper Precautions, as I have demonſtrated ſeveral Times upon dead Bodies at *la Charité*. Then nothing would remain but the Wound in the Integuments which would be ſoon healed.

PLATE

PLATE V.

FIGURE I. *Repreſents the* Catheter, *of which M.* Albinus *has given the Deſcription, for the lateral Operation of M.* Rau.

A THE Handle.
B The Bending.
C The Head.
D The Groove.
E The Extremity.

FIGURE II. *The* Catheter *I uſe for M.* Rau's *lateral Operation.*

A The Handle.
B The Bending.
C The Groove.
D The Extremity.
E Theſe two Lines deſcribe the Length of the Opening that is in the *Catheter.*

FIGURE III. *The* Lithotome *of M.* Rau.

A The Point.
B The End of two Edges.
E The Handle.

FIGURE IV. *The* Lithotome *of M.* Cheſelden.

A The Edge.
B The Handle.
E The Back.

FIGURE V. *The Figure of the Stone which was uſed in making the Tryals, as it ſhews when flat, and in profile.*

OF

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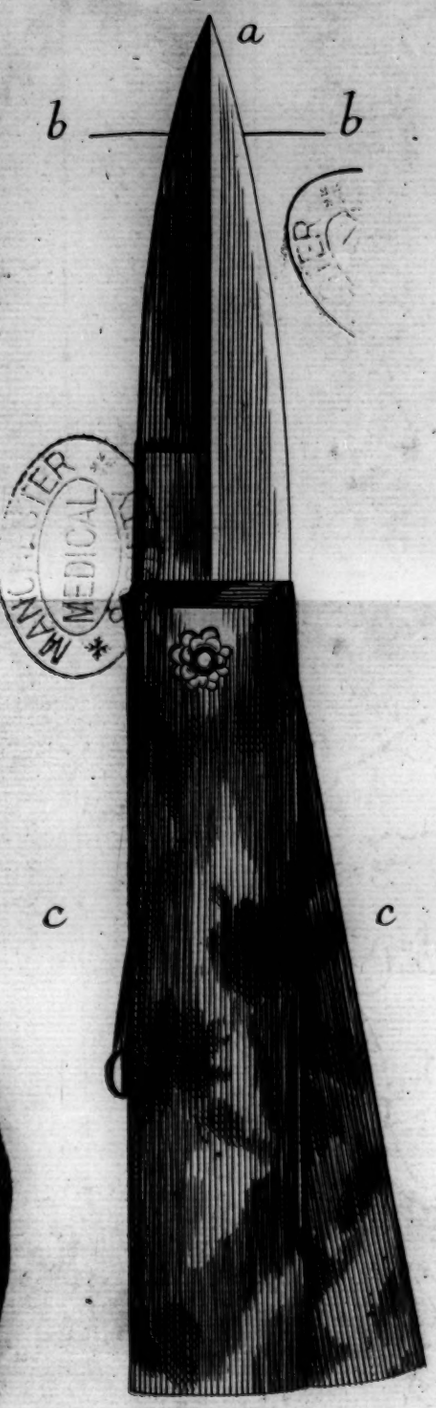

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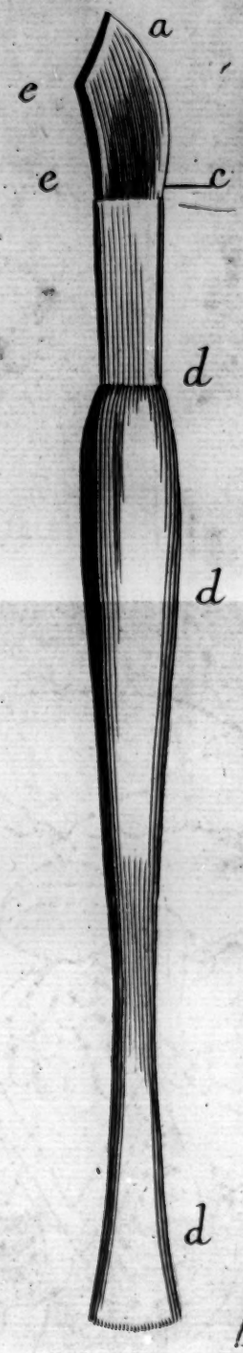

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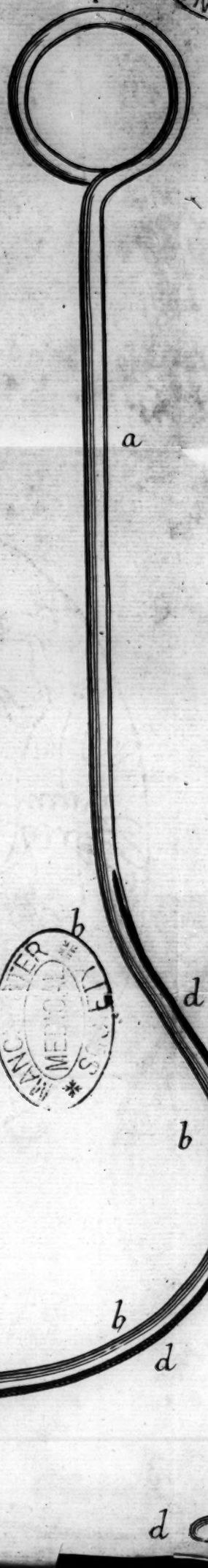

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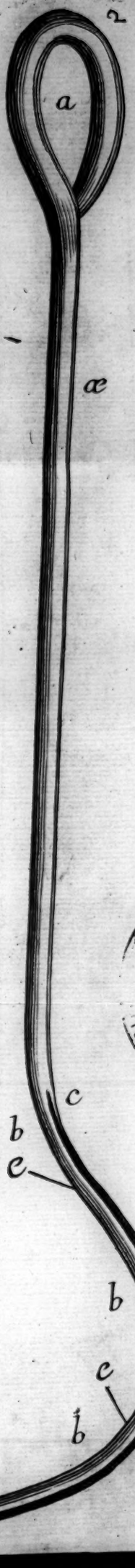

OF THE

Lateral Operation

OF

M. *RAU.*

M. *Rau*'s lateral Operation, is pretty nearly the ſame with that which Frere *Jacques* formerly practis'd in *Paris*, and in ſeveral other Cities.

THIS Operation, altho' not methodically perform'd by this Fryar, was often attended with Succeſs; but yet oftener have the Patients fallen Victims to his Raſhneſs and Ignorance.

THE *Catheter* which he put into the Bladder had no Groove, where-

wherefore the *Lithotome* had nothing to guide it; it ſerv'd only to bring the Bladder which he deſign'd to open, near to the external Wound; and Chance alone determin'd the Courſe he took to get at the Stone. Sometimes he open'd the Neck of the Bladder, and ſometimes its Body; as hath appeared after the Deceaſe of thoſe who have periſh'd under his Hands. M. *Seignette* a Surgeon with whom this Fryar lodg'd at *Amſterdam*, has ſtill (as I have been aſſured) two Bladders which he took out of the dead Bodies of two Patients whom this Fryar had cut for the Stone. In one, the Inciſion is in the Body of the Bladder beyond the Orifice; in the other, the Opening begins at the Neck on the Place where the *Verumontanum* is, and ends at the Body of the Bladder, an Inch beyond the Orifice;

ſo

ſo that in this laſt the *Proſtatæ* are open'd, and the Orifice is cut.

THE late M. *Rau* a celebrated Profeſſor in the Univerſity of *Leyden*, having ſeen this Fryar operate, and having open'd ſeveral who had dy'd under his Hands, diſcover'd this Operation to be excellent in itſelf, provided it was well perform'd; and that it had often fail'd of Succeſs only thro' the Fault of the Operator, who not being acquainted with his Subject, work'd at a Venture. He corrected it, and practis'd it afterwards with ſuch aſtoniſhing Succeſs, that they reckon above 1000 Patients who were cured by him.

M. RAU has not left us his Method in Writing, but M. *Albinus*, another celebrated Profeſſor at *Leyden*, who has given us the Life of this great Man, has added at the End of this Work a particular Account

count of his Manner of operating. This Account is ſo circumſtantially deſcribed, that with an exact Knowledge of the Anatomy and Poſition of the Parts, it is not difficult to perform this Operation; this is what he ſays of it.

M. RAU laid his Patient horizontally upon a Table of a convenient Height, arm'd with a Mattreſs and ſome Pillows. His Buttocks were placed upon the Edge of the Table, his Legs and Thighs folded, rais'd, ſeparated from each other, and held faſt by two Servants, his Hands being alſo tied to his Heels that he might not ſtir. The *Catheter* which he uſed, was ſomething longer and ſtraiter at the Head from its Bending to its Extremity, than that which is uſed in the grand *Apparatus*. Its Groove was very deep, his *Lithotome* was likewiſe ſharper, and made in the Shape of

a

a Lancet, from eight to ten Lines in Breadth at the Tongue, and two Inches and a half long without the Handle.

The *Catheter* being introduced into the Bladder, M. *Rau* took the Handle in his left Hand, and directed it a little on the Side of the *Abdomen* and the right Groin, ſo that its Bending being placed in the Bladder near its Orifice, might join its ſelf to the left Side, at the Place that was to be open'd. This Place is beyond the Orifice, tending towards the lower, hinder and lateral Part.

The *Catheter* being placed, M. *Rau* preſs'd gently upon its Bending, ſo as to bring the Bladder as near as poſſible to the Space which is between the *Anus*, and the Tuberoſity of the *Iſchion*. Then he put his right Thumb between theſe two Parts, and endeavour'd to diſ-

cover

cover the Bending by his Touch, thruſting the *Catheter* againſt his Finger, and his Finger againſt that.

THERE he made his Inciſion from above downwards, pretty large, tending towards the Side of the Buttock, penetrating only into the Fat, not too near the *Anus*, for fear of hurting the *Rectum*, nor too near the Tuberoſity, for fear of removing from the *Catheter*. Its Bending which one feels ſufficiently, indicates the Courſe one muſt ſteer. He drew out the *Lithotome*, and having a ſecond Time felt the Bending with his Finger, skilfully continued the Inciſion on that Side. Sometimes he put his Finger into the *Rectum*, that he might the better judge of its Situation, and keep at a Diſtance from it. He then felt with his Finger for the Bending of the *Catheter* a third Time,

Time, and replaced it, if it had been disorder'd by any Motion. Then causing the Patient to be held very steady, and especially his Buttocks, he again took the *Lithotome*, lodged its Point in the Groove, and afterwards carry'd it along this Groove, more towards the Bottom of the Bladder, than on the Side of its Orifice, and made an Incision therein not very large.

HE then drew out his *Lithotome*, taking care that the *Catheter* did not remove from the Wound made in the Bladder, and thrusting in his Finger, he sought for the *Catheter*, and examined the Extent of the Wound; having found it, he lodg'd in its Groove the Head of a male *Conductor*. Then bringing the Handle of the *Catheter* a little towards him, that the Head might be directed towards the Bottom of the Bladder, he securely,

by the Help of the Groove, introduced the *Conductor* therein. To this Inſtrument he join'd the Female, and paſſing a *Forceps* between them both, charged the Stone and extracted it.

UPON reading this Account, it ſeems as if the Operation were long in performing, becauſe M. *Rau* introduced his Finger at ſeveral Times into the Wound to feel for the Bending of the *Catheter*; nevertheleſs it is not ſo long as that of the common Method, not only becauſe one may omit putting the Finger ſo often into the Wound, but alſo becauſe the Eaſe with which the Stone comes out, very much ſhortens the Time of the Operation.

I WOULD not be ungrateful, and therefore join with the Publick in my Acknowledgments to M. *Albinus* for the Preſent he has made us; but I cannot avoid ſaying that it is very

very difficult, not to ſay impoſſible, to make the Figure of the *Catheter*, of which he has given us a Draught, agree with the Structure of the Parts.

I have often open'd the Bladder in dead Bodies at the Bottom, and having faſten'd its two Sides on the right and the left in the *Pelvis*, have introduced by the *Urethra* a *Catheter* made according to this Draught. I have found it impoſſible to fix the Bladder with this *Catheter* at the Place deſcribed in the Account of this Operation. I have found that on only drawing the Handle of the *Catheter* a little on the Side of the Belly and the right Groin, its Bending retires into the *Urethra*, filling the Quarter of a Circle which this Canal makes before the *Symphyſis* of the *Pubes*, and that there remains but about an Inch of its Head in the Bladder.

Beſides if one would put the Bending of this *Catheter* into a ſmall or callous Bladder, the Length of its Head would hurt its Bottom.

HAVING made this Examination very exactly, I ſay that if M. *Rau* open'd the Body of the Bladder, the *Catheter* he uſed muſt neceſſarily be of another Figure than that which M. *Albinus* deſcribes; or that if he uſed ſuch a one, he began his Inciſion at the *Urethra* itſelf, ſince he made it upon the Bending of the *Catheter*, and ended it beyond the Orifice of the Bladder, which cannot be done without cutting in two the Neck of the Bladder, the *Proſtata* on the left Side, and the Orifice. This is preciſely M. *Cheſelden*'s lateral Operation which I ſhall hereafter deſcribe.

BUT is it not more natural to think that M. *Rau* made his Inciſion

ſion into the Body of the Bladder upon a *Catheter* of a proper Shape? The whole Account which M. *Albinus* gives of the Operation proves it after a convincing Manner. As for me I do not in the leaſt doubt it, and I know the poſſibility of it ſo much the better, inaſmuch as I have often perform'd this Operation, both upon living and dead Bodies, almoſt after the ſame Manner as M. *Albinus* has deſcrib'd it, with a *Catheter* whoſe Bending I adapted to the Parts themſelves, ſo that it anſwers the Intention of the Operator in the Bladder, and can't ſlip into the *Urethra* like the other. I have, 'tis true, made ſome Alterations therein, but in the Main 'tis the ſame Operation, and I have neither chang'd nor added any Thing to it, but to render it more eaſy, more ſafe, and more ſpeedy in the Execution.

THIS *Catheter* which I make uſe of, has a little Tongue which juts out at the Place of its Bending, its Handle is longer and its Head ſhorter than that which M. *Albinus* deſcribes; wherefore it may be lodg'd entire in the ſmalleſt Bladder. Beſides the Groove of this *Catheter* has an Opening at the Part of the Tongue which forms its Bending, and it is only furrow'd the whole Length of the Head. This Opening in the *Catheter* procures us two great Advantages; 1. One opens the Bladder without any Difficulty, very quick, and as much as one pleaſes, which 'tis very difficult to do with a *Catheter* ſimply furrow'd. 2. It is impoſſible to hurt the *Rectum* by prolonging the Inciſion of the Bladder towards its Bottom.

THE Tongue of this *Catheter* being placed in the Bladder at the Part

Part which is to be open'd, and the Inciſion made in the Teguments at the ſame Place where M. *Rau* made it, I lay along the Fore-Finger of my right Hand a *Lithotome* about ſix Lines in Breadth, ſhap'd like a Carp's Tongue towards the Point, with two Edges between five and ſix Lines in Length at moſt; the Handle is long enough to be held firm in the Palm of the Hand with my other Fingers. I introduce into the Bottom of the Wound my right Fore-Finger along which this *Lithotome* is placed in ſuch a Manner, that its Point is even with the End of my Finger, and feeling the Bending of the *Catheter* thro' the Thickneſs of the Bladder, I thruſt the Point of the *Lithotome* into the Slit which is in the *Catheter*, juſt for it to paſs out two or three Lines beyond it. Then moving the ſame Finger from Top to

Bottom along the Progreſs of the Bending of the *Catheter*, the Inſtrument which this Finger guides, cuts the Bladder without any Difficulty, and as much as I think proper. As ſoon as the Inciſion is made, I draw out the *Lithotome*, and paſs into the *Furrow* of the *Catheter* the Head of a *Gorgeret*, with ſo much the more Eaſe, becauſe Part of the Tongue of the *Catheter* paſſing a-croſs the Inciſion of the Bladder, makes itſelf felt in the Wound without the Trouble of ſearching for it. By the Help of the *Gorgeret* I paſs into the Bladder a *Forceps* ſuitable to the Size of the Stone.

In the *Mercury* of *December* 1729, there is inſerted a Letter written by M. *Morand* a ſworn Surgeon at *Paris*, to M. *Senac*, Phyſician to the King at St. *Germains*, upon the Subject of cutting by the

lateral

lateral Operation. In this Letter M. *Morand* ſays that he has often try'd M. *Rau*'s Operation, following exactly his Method as M. *Albinus* has deſcrib'd it; but that it is very difficult, not to ſay impoſſible, not to injure the *Rectum*. I thought the ſame the firſt Time I try'd this Operation upon a dead Subject, making uſe of a *Catheter* of which M. *Albinus* has given us the Draught; but being moved with the Succeſs of M. *Rau*, who formerly wrote to M. *Winſlow* in theſe Terms: *(Si omnia recenſerem Commoda quæ ex hac Methodo Lithotomiam inſtituendi proveniunt, pluſquam mille Exemplis comprobata, Epiſtola nimium excreſceret.)* I was not deterred by theſe Difficulties; and finding that they aroſe only from the Shape of the *Catheter*, I contrived that before mention'd; and I dare aver that having ſince

cut

cut above 60 dead Subjects, and many Patients afflicted with the Stone, I never had the Miſchance to open the *Rectum*. Several of my Brethren have been Witneſſes hereof, and amongſt others M. *Verdier* whom M. *Morand* cites in his Letter. If M. *Morand* had uſed a *Catheter* like mine, he would have himſelf found that it eaſily enters entire into the Bladder, that it fixes it without Difficulty, that it brings it very near the external Inciſion, ſo that the *Arteria Pudenda* which paſſes under the Tuberoſity of the *Iſchion*, is cover'd and ſecured by the Bladder itſelf; in ſhort that it is very eaſy to open the Body of the Bladder without hurting the *Rectum*; and I believe after all this he would have chang'd his Opinion.

In this lateral Operation, the whole urinary Paſſage is no more concern'd than in the High Way; 'tis

'tis the Body of the Bladder itſelf which is open'd beyond its Orifice; for which Reaſon many Perſons extol it as being preferable both to the old Method, and M. *Cheſelden*'s Operation: Nevertheleſs it has its Inconveniences.

INCONVENIENCES

Inſeparable from

M. RAU's *Operation.*

THEY pretend it is very difficult to be performed on Patients who are very fat, by Reaſon of the Thickneſs of the Integuments; that it is likewiſe very difficult to be practis'd on little Children, on Account of the Weakneſs

neſs of the Probe which he deſcribes, and which may bend in fixing the Bladder at the Place proper for the Inciſion: Nevertheleſs I have perform'd it with much Eaſe, not only upon the Bodies of Perſons who have dy'd of a * *Leucophlegmatia*, and Children between four and five Months old, but alſo upon divers Patients both great and ſmall; wherefore one may ſurmount theſe two Difficulties, and they ought not to be placed among the Inconveniences of the Operation.

I CANNOT conſider that as any Thing which may happen to the Bladder at the coming out of the Stone. The Inciſion that is made therein is not large enough for a Stone of any Size, and this is what

* *Leucophlegmatia.* A Diſtemper wherein all the Veſicles of the *Panniculus Adipoſus* under the Skin are full of Water.

hap-

happens: As the Bladder is compoſed of Fibres which are all capable of giving Way and ſtretching, the greateſt Part of theſe Fibres are diſtended to a certain Degree; namely, thoſe which are at the Lips of the Inciſion, and they which are at the Angles yield alſo a little, but the firſt ſoon breaks, after that the ſecond, and in the like Manner ſome others ſucceſſively, according as there is Occaſion, juſt as ſome Threads of a Ball of Cotton break when they are carded, whilſt others only ſtretch; but this new Diviſion is ſlight, and beſides it diſappears almoſt immediately after the Extraction of the Stone, becauſe the fleſhy Fibres of the Bladder which contract themſelves, leſſen the Diameter every Way.

SINCE this ought by no Means to be ranged among the Inconveniences, there remain only two Things

Things which may be eſteem'd as ſuch. This is the firſt.

If the Bladder be diſtemper'd, if it ſuppurates, the Motion of the *Catheter* which muſt preſs upon it and fix it, is painful, and if it is callous, it will be found hard to make it give Way, and approach the outward Inciſion. This however did not prevent my placing the *Catheter* as I ought in two Patients, whoſe Bladders were very ſmall and very callous.

Here is another which deſerves more Attention; if the Bladder muſt ſuppurate, as all thoſe will which are callous, or thoſe from which a *Fungus* has been extracted, one cannot avoid putting into the Wound, immediately after the Operation, a *Cannula* to keep the Way open. It is eaſy to put it in, but if by any Motion of the Patient it ſhould come out of the Bladder,

or

or if it be neceſſary to take it out at the End of ſome Days to clean it, it is very hard and almoſt impoſſible to introduce it again. This is what I found in the two Patients juſt before mention'd; nevertheleſs the Want of a *Cannula* did not hinder their Bladders from ſuppurating, and throwing much viſcid Matter out of the Wound for three Weeks, in which Space of Time I made the proper Injections five or ſix Times by the Help of an *Algaly* introduced into the *Urethra*.

THE

THE ADVANTAGES OF *M.* RAU's *lateral Operation.*

I AM not ſurpriz'd that this Operation when methodically practis'd by the Author, met with ſuch great Succeſs, and I wonder it has been laid aſide; ſince for two only Inconveniences to which it is liable, I ſee a great many Advantages that ariſe from it.

THE Largeneſs or Smallneſs of the Bladder are in this Caſe both alike, ſince the Inciſion of the Bladder muſt be made near its Orifice. Every Thing that concerns the

the *Urethra*, the Neck of the Bladder, or its Orifice, and even its Parts remain entire, and conſequently there is no Fear either of an Incontinency of Urine or a *Fiſtula*.

This Operation is much leſs painful than any other, and the Reaſon is manifeſt. There is, properly ſpeaking, neither Diſtenſion nor Dilaceration, becauſe herein we attack only thoſe Parts whoſe Texture is very looſe; 'tis the Skin, the Fat which is on the Side of the *Rectum*, the *Levator Ani*, a ſmall Part of the cellular Texture which joins to the Bladder, and the Bladder itſelf which we ought to conſider but as an excavated Muſcle whoſe Wounds are by no Means mortal; Experience ſhews it.

There is no *Hæmorrhage* to be fear'd, and one can only touch a

ſmall Branch of the external *Hæmorrhoidals*, which immediately retires as ſoon as it is cut and loſes itſelf in the Fat. As for the *Arteria Pudenda*, it is ſo hid behind the Tuberoſity of the *Iſchion*, and behind that Part of the Bladder which the *Catheter* brings near to the outward Inciſion, that to open it we muſt ſeek for it, and ſhould not be able to find it without Difficulty.

BESIDES, there is little or no Difficulty in extracting the Stone, becauſe there are none but ſoft Parts which eaſily yield to its Size, as I have obſerv'd before; conſequently there is little Danger of exciting an Inflammation therein, if ever ſo little Care be taken in performing the Operation.

See Pl. 2. fig. 1. P. and Q.

IN ſhort the Situation of the Thigh which is extended after the Operation, whereas during the Ope-

Operation it was very much bent, this Situation, I ſay, muſt neceſſarily bring the Sides of the Wounds near enough to each other to prevent the Urine's paſſing that Way, and oblige it in a few Days to return to its natural Courſe; oftentimes alſo when the Stone has been ſmall, and conſequently the Parts have not been fatigued in its Paſſage, the Suppuration is ſlight, and the Wound is ſoon cured.

Here an Objection occurs which ſeems founded upon the Structure of the Bladder itſelf, and upon its Mechaniſm. The Neck of the Bladder is cloſed and in its natural State, the Urine does not take this Paſſage, but becauſe the Bladder which contracts itſelf obliges it to go off by the only Opening which it can find. If an Inciſion is made in the Body of the Bladder, the Urine (ſay they) will

always find an eaſier Paſſage thro' the Wound where nothing oppoſes its going out; wherefore it will prevent the Reunion, and the Wound will remain Fiſtulous.

THIS Argument is much of a Piece with moſt Syſtems; in vain they ſeem prov'd after a convincing Manner, Experience contradicts them, and the ſame happens here. 'Tis not upon the Operations made by Frere *Jacques* that I build; he work'd at a Venture, and as ſeveral Patients have periſh'd by his Fault, others alſo by his Fault have remain'd Fiſtulous; but upon what I have ſeen in the Patients which I have cut after this Manner at the Beginning of *October*, and upon the Succeſs which has eterniz'd the Memory of M. *Rau*. Being an able and a careful Operator he left the old Way tho' by it he had acquired a great Reputation, but he only

only left it to practiſe an Operation which ſeem'd to him to be better, and leſs liable to Accidents. If his Patients had continued fiſtulous after his lateral Operation, he would ſoon haue diſcover'd the Abuſe of this Method, and have reſum'd the old one. The Number of Experiments which he has made, before the Eyes of the whole World, of a Method which he never quitted, ought to ſuperſede all Manner of Reaſoning, and from them only ought we to draw our Concluſions.

OF THE

Lateral Operation

WHICH

M. *CHESELDEN.*

Practiſes at *London.*

ENGLAND has produced many great Men to whom Arts and Sciences have been greatly obliged. I am not afraid that Nation ſhould diſavow me in placing M. *Cheſelden*, a famous Surgeon at *London*, in this Number. Being nobly emulous of thoſe who have ſignaliz'd themſelves in Surgery, he has improved by the Reflections of the late M. *Merry*, Surgeon at *Paris*, printed in 1700. M. *Merry*, in

Chap.

Chap. xiv. examines whether the Operation of Frere *Jacques* and thoſe of other Lithotomiſts can be rectify'd, and he gives a Hint of a lateral Operation, ſo as he imagines it may be perform'd. M. *Cheſelden* has improv'd this Hint as much as may be, perhaps he may have deriv'd it from his own Reflections and the Diſſection of dead Bodies without M. *Merry*'s Aſſiſtance. However it be, the Operation which he now practiſes (as they ſay) with Succeſs, is different from the other Methods which I have already deſcrib'd. I am going to give an Account of it, or at leaſt of the Manner after which it is proper to perform it.

IT ought not to be wonder'd at that I undertake to deſcribe an Operation which I never ſaw perform'd by the Author; it is not in Lithotomy as in moſt other Opera-

tions: They may vary in the Manner of their being perform'd, and they ought often ſo to do in regard to the different Circumſtances of the Diſtemper for which one operates; Circumſtances which often change either the Situation, or the natural State of the Parts. In the Operations by which the Stone may be extracted out of the Bladder, whatever Way is perſued, the Parts thro' which we muſt paſs to arrive at the Stone, are always in their natural Situation, there can be no other Difference in them than by the Patient's being more or leſs corpulent.

THOSE then who are accuſtom'd to work, and who are perfectly acquainted with the Structure and Poſition of the Parts, may judge of what Nature M. *Cheſelden*'s Operation muſt be, when they are inform'd, as it is known at

at preſent by thoſe who have ſeen this great Man operate, of the Place where the firſt Inciſion is made, the Figure of his *Lithotome*, the Shape of the *Catheter* he uſes, and the Manner of his placing it after its Introduction.

THE *Catheter* which is uſed in this Operation, is the ſame with that uſed in the great *Apparatus*.

THE *Lithotome* is not made like the others; 'tis a kind of Penknife, whoſe Blade, which is made in the Shape of a Buckler, is but four Lines broad and ten Lines in Length, being ſupported by a Handle ſomewhat narrower, the Back is not ſharp. Pl. 5. fig. 5.

THE Patient is placed after the ſame Manner as in M. *Rau*'s lateral Operation. The *Catheter* is introduced into the Bladder, and its Handle is laid upon the Patient's right Groin, where an Aſſiſtant Sur-

Surgeon, who ought to be very expert and very careful, holds it firm with one Hand, whilſt with the other he ſupports the *Scrotum*. By this Poſition of the *Catheter*, the *Urethra* is fix'd and ſupported againſt the *Symphyſis* of the *Pubes*, which removes it as far as poſſible from the *Rectum*, and the Groove of the *Catheter* is towards the Interval which is between the *Anus* and the Tuberoſity of the *Iſchion*.

THE Inciſion ought to commence at the ſmall End of the *Catheter*, on the left Side near the *Rhaphe*, a little above the lower Part of the *Erector* Muſcle, almoſt as in the lateral Operation of M. *Rau*. This Inciſion muſt be extended towards the Angle of the Tuberoſity of the *Iſchion*, ſo as to end between the Tuberoſity and the *Anus*. If from the Time that the Patient has been afflicted, there

is Reaſon to think the Stone large, it muſt be extended yet farther. It ought to be deep enough to penetrate, either at one Stroke of the *Lithotome*, or at two, beyond the *Accelerator*, a little on this Side the *Proſtatæ* underneath the tranſverſe Muſcle. As the Operator's left Hand is not employ'd in holding the *Catheter*, the Fore-Finger of this Hand being introduced into the Wound, feels the Groove, and ſerves to conduct the Point of the *Lithotome* ſafely into it. This Point in entring into the Groove muſt pierce the membranous Part of the *Urethra*, exactly on this Side of the *Proſtatæ*.

THE Point being lodg'd, and its Edge turn'd, not towards the lower Angle of the Inciſion, but obliquely towards the fix'd Point of the *Erector* Muſcle, the Operator carries the Point of the *Litho-*

tome

tome in the Groove as far as its End; and as this End is in the Bladder, all that is in the Paſſage, *viz.* the Neck of this *Viſcus*, its Orifice, and the left *Proſtata*, are cut by an oblique Inciſion. If this Inciſion went but to the Orifice of the Bladder excluſively, or incluſively, it would not be ſufficient, ſince the End of this Operation is to cut thoſe Parts which are dilated, and if I may dare ſay ſo, torn in the great *Apparatus*. At the Orifice and glandulous Body of the *Proſtatæ*, the Inciſion ought to be a full Finger's Breadth deep.

WHEN the Inciſion is ſufficient, the Operator withdraws the *Lithotome*, and by the Help of his Finger, or of the Groove of the *Catheter*, he puts in the Head of a *Gorgeret* which he thruſts into the Bladder. By the Means of this Inſtrument he conducts thither the

For-

Forceps, which is to charge the Stone and extract it after the ordinary Manner.

IF the Inciſion is made as large and as deep as may be, the Stone comes out eaſily, provided its Bulk does not exceed the Aperture that has been made.

I WILL not pretend to rob M. *Cheſelden* of the Honour of having perfected, and perhaps invented, a Way of cutting which is very ſucceſsful; but I cannot avoid ſaying, that after having examin'd the Matter very narrowly upon dead Bodies, I find this Operation comes very near to the old Way. The Difference between the two Methods conſiſts in this, that they cut (excepting the tendinous Part of the *Urethra* which is not touch'd) all that in the great *Apparatus* is obliged to yield to the Dilator, to the Size of the *Forceps*, or elſe the Fin-

Finger of the Operator. We ſhall examine preſently whether the Inciſion of the *Proſtatæ*, the Neck, and Orifice of the Bladder is more advantagious than the Diviſion made thereof in the Dilatation.

INCONVENIENCES OF THIS METHOD.

THE firſt that occurs is very great. Which is the Neceſſity of having the *Catheter* held by an Aſſiſtant which ought to guide the Inciſion Knife. I have always ſeen that the greateſt Part of Aſſiſtants have nothing but Eyes when the Maſter is at work, and that being

being more attentive to what he does, than what they ought to do themſelves, they loſe, if I may uſe that Expreſſion, the Uſe of their Hands, and either do very ill, or not at all, what they are order'd to perform. Now in following M. *Cheſelden*'s Method, on the juſt Poſition of the *Catheter* depends the whole Safety of the Operation, and the Aſſiſtant who holds it, may by diſplacing it (tho' never ſo little) perplex and even miſguide the Operator, as has been known to happen.

THE ſecond is the Opening of the external *Arteria Pudenda*, which aſcends between the *Erector* and *Accelerator* Muſcles to go on to the *Corpus Cavernoſum*, and that of the Branch which proceeds from thence to go to the *Urethra*: But by avoiding to make the Inciſion too high and too oblique, one may keep

keep from theſe Arteries. But yet if one ſhould open them, as they are within the Surgeon's Reach, the Blood may be ſtopt by a Ligature, by ſtyptick Water or by Compreſſion, wherefore one cannot reckon this Inconvenience as any Thing, otherwiſe than as it may render the Operation much longer, eſpecially if one is oblig'd to make the Ligature, ſince the Operation is not thought to be finiſh'd till the Patient has no more to ſuffer, and is in a Condition to be put into his Bed.

The third is the *Hæmorrhage*, which may happen in Conſequence of opening that Branch of the Artery which goes to the *Proſtatæ*. I do not ſpeak of the Trunk from whence theſe Branches proceed, I know it is out of the Reach of the Edge of the *Lithotome*; I ſpeak of the Branches which are certainly in Dan-

Danger of being open'd, becauſe the Parts which theſe Veſſels nouriſh are cut. How hard then will it be to ſtop the *Hæmorrhage* which muſt neceſſarily follow the Opening of theſe Veſſels?

MUST we here reckon the forcible Diviſion of the Parts that one has begun to cut, that is to ſay, the Diviſion which ſucceeds the Inciſion, when the Stone happens to be very large? This forced Diviſion ſeems very unlikely, and even ſhocks one, ſeeing that (as has been ſaid above) the End of M. *Cheſelden*'s Inciſion is to cut what in the old Method is forced to give Way; however it is not the leſs real. I know, and we have ſeen, that in extracting a ſmall Stone, the Opening which the Knife makes may be ſufficient, as well as that made by the Introduction of the Dilator, the *Forceps* or the Finger in the

common Way; but I alſo know that for a Stone ſomething large the Inciſion will no more ſuffice than the Dilatation. In the common Method, after the *Urethra*, the Neck of the Bladder, and the *Proſtatæ* are open'd, as I have ſaid, the ſofteſt Fibres which are in the Paſſage of the Stone ſtretch or break according to its Size. 'Tis the ſame here; after that the Parts have been cut as much as the *Lithotome*, which is not very large, can do it in its Paſſage, if one accompliſhes the Extraction of the Stone, the Fibres which remain'd entire along its Paſſage break alſo, and it cannot be otherwiſe. Every one of them in particular, let it be of what Nature it will, has very little Strength to reſiſt by itſelf, and if it does reſiſt, it is only becauſe it is ſupported by all thoſe that are adjacent to it, and they all reſiſt together.

See Exper. 9.

See Exper. 13.

But

But as ſoon as one Fibre happens to be cut, the next to it which is no longer ſupported muſt break. The ſame muſt happen to that which follows, and ſo ſucceſſively all muſt give Way one after another; otherwiſe the Paſſage of the Stone would be too narrow, and it could not be got out. There is then neceſſarily a Diſtenſion of ſome Fibres, and a Rupture of others; and theſe Fibres are membranous, tendinous, muſculous, *&c.* Beſides, the *Proſtatæ* muſt be neceſſarily contuſed in the Paſſage of the Stone, provided it be but any Thing large. But as in the Caſe of a great Stone, this lateral Operation goes Hand in Hand with the common Way which has ſo often been attended with Succeſs, I believe it ought to be attended with the ſame, provided the Extraction is made with Diſcretion,

and with all the Care that is neceſſary.

It may be asked if the Inciſion made in the Neck of the Bladder, and at the *Proſtata* by the *Lithotome*, is not leſs dangerous than the Diviſion made therein by the Introduction of the Finger or Inſtruments in the grand *Apparatus?* I believe it ought to be conſider'd as much the ſame. Both in the one and the other of theſe Operations, there is a Suppuration, both on Account of the continual Paſſage of the Urine, which does not permit a ſpeedy Reunion, and on Account of the Contuſion, at leaſt a ſlight one, which is made on the Sides of their Diviſions; therefore in this Reſpect theſe two Operations are upon a level. Beſides, the Inflammation and the other Accidents which may ſucceed the grand *Apparatus*, may ſuc-

ſucceed M. *Cheſelden*'s Operation, even ſuppoſing theſe two Operations perfectly well perform'd.

ADVANTAGES OF THIS METHOD.

WE may apply to this Method all that I have ſaid of the Advantages of the grand *Apparatus*, becauſe they are the ſame, wherefore I ſhall not repeat them. We may reckon one more; that is, the Inciſion made by the *Lithotome*, which cuts all that is opened in the grand *Apparatus* by the Introduction of the Finger or the Inſtruments. In the Operation here in

Queſtion, this Inciſion is made according to the Deſire of the Operator in a right Line, and not at a Venture: But is this an Advantage? All that the *Lithotome* finds in its Paſſage is certainly cut, and muſt ſuppurate, whereas by the Dilatation made in cutting upon the Staff a good Part of the fleſhy Fibres are only extended. I will not determine whether the Inciſion is leſs painful than the Dilatation; one muſt have felt both the one and the other to be able to ſpeak with any Certainty. What is certain is that the *Proſtata* is cut, and not denudated as we ſee it is by the Dilatation, if it is not ſplit in two, and that deſerves ſome Conſideration. All that I have ſaid concerning this Operation is founded upon the repeated Experiments which I have made upon dead Bodies. It is to be hoped that M.

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Cheſelden will both impart his Method to the Publick which I perhaps have only given a rude Sketch of, and the Obſervations he has made ſince he has begun to put it in Practice.

A N

EXAMEN

INTO

The State of the Parts which have been concern'd in each of these Operations.

NATOMY is the Light which only can illuminate Surgery; and altho' in the more ancient Times the Knowledge of the Parts of a human

man Body was as yet a very imperfect Science, it cou'd only be by the Help of this Light that the firſt Surgeons durſt venture to introduce a cutting Inſtrument therein to cure its Ailments. Without this, durſt they ever have penetrated into a Part ſo hidden as the Bladder to extract the Stone?

THE Progreſs which Anatomy has made in proceſs of Time has been the Meaſure of the Progreſs of Surgery; thus the Pupils ſurpaſſing their Maſters, have added new Lights to thoſe which they had receiv'd from them, and Art multiplying its Diſcoveries daily, we have ſeen the different Methods invented, which I have juſt deſcrib'd.

I CONSIDER'D a long Time this Multiplicity of different Operations for extracting the Stone, only as the Riches of an Art fruitful in Remedies, and the more ſo, ſince each

each Method has been adopted by eminent Surgeons, and ſeem'd conſecrated by their Succeſs. But upon reflecting on the different Structure of the Parts which ſurround the Bladder, and thro' which one muſt paſs to arrive at the Stone, and which may be concern'd in its Extraction, I found that upon this Account there might be an eſſential Difference between one Method and another. I cou'd not remain long without informing my ſelf thereof, and being impatient to approach at leaſt to that Perfection which every Man ought to propoſe to himſelf, with whom his fellow Citizens think fit to intruſt their Lives, I have taken the Advantage of the frequent Opportunities afforded me by the Place with which his Majeſty has been pleas'd to honour me, in appointing me Surgeon-Major to the Hoſpital of *la Charité*,

Charité, and I have often open'd that great Book of the human Body.

I THOUGHT at firſt I might find ſome Inſight in diſſecting the Bodies of thoſe who dy'd after the Operation for the Stone (for it is impoſſible but that ſome muſt die amongſt the Numbers of thoſe who are cut there) but the moſt Part of theſe Diſſections were of no Uſe to me, for the End I had propoſed to my ſelf. The Inflammation in thoſe who dy'd a little after the Operation, and the waſting of the Parts by Suppuration, or their Deſtruction by a Gangrene in thoſe who did not dye till ſeveral Days after, had ſo disfigured them, that it was very hard and almoſt impoſſible to make a ſound Judgment of what had paſs'd in the Operation. Not being able to reap from my Inquiries all the Benefit that I expected from them, I re-

reſolved to cut dead Bodies according to the different Methods, in order to examine afterwards the Parts that had been concern'd therein. And as in the great *Apparatus*, all the *Lithotomiſts* do not operate after the ſame Manner, as I have obſerv'd, after having cut according to the Practice of each of them, I examin'd, I ſay, the State of the Parts in every *Cadaver*. That I might ſee as much as poſſible what paſſed within as well as without in the manual Part of each Operation, I began by opening the dead Bodies; then opening all the Bottom of the Bladder by a longitudinal Inciſion, I faſten'd its Sides on the right and left in the *Pelvis*; after which I perform'd the Operation. This done, I ſaw'd the *Oſſa Pubis* tranſverſely below their *Symphyſis*, and made an Inciſion into all the urinary Paſſage extending from

from the Root of the *Penis* to the Body of the Bladder incluſively. By this Inciſion I have in ſome ſeen what the *Lithotome* had cut; in others I obſerv'd the Effect of the Dilatations; and in others what the Stone had been able to do in coming out.

'Tis only by ſuch Experiments that one can clearly ſee what paſſes in the Parts concern'd, upon following each of the Methods which I have before deſcribed, and 'tis likewiſe by this alone that one can determine one's Choice. Every one may perform them as I have done, there is in this Operation hardly any Difference between the Parts of a dead Body and a living one, and in the repeating theſe Trials, if they uſe a Stone of the ſame Size with that which I uſed, they can only differ as to more or leſs in the Diviſion or Laceration, which will de-

depend upon the Manner of their going about to extract the Stone.

FOR THE

APPARATUS Major.

The Result of the Dilatations whereby a Paſſage is made for the Stone.

EXPERIMENT I.

I Began the Operation preciſely after the ſame Manner as I ſaid M. *Colot* perform'd it, opening the *Urethra* only at the *Perinæum*. I introduced upon the male *Conductor* the Dilator, which I open'd as much

much as poſſible. I did not finiſh the Operation either in this Trial or in ſome others; that is to ſay, I did not extract any Stone, leſt in coming out it ſhould disfigure the Parts where I wanted only to ſee the Effect of the Dilatations. After this, I ſaw'd the *Oſſa Pubis* and open'd all the Canal, and the Bladder itſelf on that Side which regards the *Symphyſis* of the *Pubes*.

I FOUND the whole *Urethra* and the Neck of the Bladder divided all along, from the End of the Inciſion made by the *Lithotome* to the Orifice only.

WHAT ſeems ſingular is, that the Body of the *Proſtatæ* had not ſuffer'd any Diviſion, altho' the Neck which they embrace was rent; but the Reaſon is plain: The Neck which is *Aponeurotic* cannot give Way to the Dilatation without rending, when on the contrary

trary the glandulous Body can ſtretch pretty eaſily; 'tis for this Reaſon alſo that after the Dilatation, the Neck which is ſlit is found ſeparated from the *Proſtatæ*.

EXPERIMENT II.

AFTER having made the Inciſion at the *Perinæum* according to the common Cuſtom, I introduced the two *Conductors* into the Bladder, and between them the *Forceps* which I immediately withdrew again. I ſaw'd the *Oſſa Pubis*, and open'd all the Canal to the Bottom of the Bladder, as I have juſt ſaid.

ON examining the Parts, I found the ſame as in the foregoing Experiment, wherefore I ſhall not repeat it.

EX-

EXPERIMENT III.

AFTER having made the Inciſion at the *Perinæum* in the ſame Manner, I introduced the male *Conductor* into the Bladder. I turned the Back of this Inſtrument towards the *Symphyſis* of the *Oſſa Pubis*, and upon this Back I introduced my Finger the whole Length of the Paſſage. I found a ſurprizing Difficulty in making this Introduction, and eſpecially in going beyond the Neck of the Bladder, becauſe my Finger could not find Space enough to ſlip between this Inſtrument and the Sides of the Paſſage. However I did get into the Bladder. I drew back my Finger, and took out the *Conductor*. I ſaw'd the *Oſſa Pubis* and open'd the Canal, as I have before ſaid.

I FOUND thro' all the *Urethra*, from the End of the Inciſion to the Neck of the Bladder, a perfect Dilaceration, which would hardly permit one to diſtinguiſh any Thing. The Neck of the Bladder ſeemed to be ſeparated from it. The Neck was rent, and the glandulous Body of the *Proſtatæ* divided in two. There was in the Bladder two Fingers Breadth from its Orifice, at the Place where it is join'd to the *Rectum*, a Mark whereon the Head of the *Gorgeret* had made an Impreſſion, notwithſtanding the Care I took to raiſe this Head towards the Bottom of the Bladder in introducing my Finger

EXPERIMENT IV.

AFTER having made the Inciſion at the *Perinæum*, I introduced the *Gorgeret* (altho' the End of this

Inſtrument be narrow, I ſaw that not above an Inch enter'd into the Bladder without forcing the Paſſage) after this I paſs'd my Finger by the Help of its Furrow, and I made this Introduction haſtily, which I forbid being done; I withdrew my Finger and the *Gorgeret*; I ſaw'd the *Oſſa Pubis*, and afterwards ſlit all the Canal at the upper Part, as I have obſerv'd.

I AGAIN found the Canal rent from the End of the Inciſion to the Bladder, a Finger's Breadth beyond the Orifice. There was at the Bulb of the *Urethra*, and that Part where this Canal is membranous, a real Dilaceration. One might ſee there a kind of Shreds, which being faſten'd at one End to the Neck of the Bladder, and the other near the Inciſion made by the *Lithotome*, were joined to Nothing by their Middle. The Body

of the *Proſtatæ* was entirely divided in two.

EXPERIMENT V.

UPON another *Cadaver* I introduced my Finger ſlowly, and with Precaution into the Furrow of the *Gorgeret*, and that only ſo far that its End was in the Bladder even with the Orifice. This done, I ſaw'd the *Os Pubis*, and ſlit the Canal.

I SAW that the *Urethra* and the Neck were ſlit on the lower Part, from the Inciſion to the Orifice excluſively. Thro' the Slit which had been made at the Bulb and the membranous Part of the *Urethra*, I ſaw the fleſhy Fibres of the *Accelerator* and *Tranſverſal* Muſcles, ſome of which were ſtretch'd and others broken. Thro' the Slit which had been made at the Neck

on

on the Side of the *Verumontanum*, I ſaw the glandulous Body of the *Proſtatæ*.

EXPERIMENT VI.

UPON another *Cadaver* I made the Inciſion at the *Perinæum* after the uſual Manner, and having introduced the *Gorgeret*, I paſs'd my Finger ſlowly and with Precaution into the Bladder, dilating the Neck as much as was in my Power, and as much as the Size of my Finger would permit, as if I had deſign'd to extract the Stone.

HAVING afterwards open'd all the Paſſage, as in the other Experiments, I found that all my Finger had been able to do to the Neck of the Bladder, was to rend it to a Finger's Breadth beyond the Orifice. The glandulous Body of the *Proſtatæ* remained entire without tearing.

EXPERIMENT VII.

To avoid making this Diviſion in the tendinous Part of the *Urethra* and the Bulb, I made the external Inciſion between the *Anus*, and the Tuberoſity of the *Iſchion*, as in M. *Rau*'s lateral Operation; then turning the Handle of the *Catheter* towards the right Groin, that its Furrow might regard the external Inciſion, I put the Point of the *Lithotome* therein, and ſlit the membranous Part of the *Urethra* to the *Proſtatæ* excluſively. I introduced the *Gorgeret* into the Bladder, and paſſed my Finger gently and with Precaution to dilate the Neck and the Orifice, as if I had deſign'd to extract a Stone. This done, I ſaw'd the Bones and cut open all the Paſſage, as in the other Experiments.

I FOUND the Neck of the Bladder ſlit as well as the Orifice, and this Slit which was upon the Side cloſe to the Inciſion which I had made, ended at half a Finger's Breadth beyond the Orifice. The glandulous Body of the *Proſtatæ* was not cut at all, but almoſt denudated on one Side; becauſe that Part of the Neck which it embraces was ſeparated from it, as if it had been diſſected.

In the following Experiments may be ſeen the Effects of the Stone in coming out.

EXPERIMENT VIII.

The Sequel of the firſt and ſecond, wherein the Dilator, or the Bulk of the Forceps, *has made the Dilatation.*

I CUT a *Cadaver*, and made uſe of the two *Conductors*, between

which I pas's'd the *Forceps* into the Bladder. Thro' the Bottom of this Bladder which I had open'd, I placed as advantageously as possible between the Chops of this *Forceps*, an oval Stone of a middling Size, being one Inch and six Lines in Breadth, and one Inch thick, which makes in Circumference four Inches and four Lines; the whole being measured upon the Stone itself. The Length signifies nothing. This done, I extracted it with all the Precaution necessary to make the least Dilaceration possible. After this, I removed the *Ossa Pubis*, and open'd the whole Passage of the Stone.

THE Division was continued from the End of the Incision made at the *Perinæum*, to the Orifice of the Bladder. Some of the fleshy Fibres of the *Accelerator* and the *Transverse* Muscles were stretched, and

and others broken. The glandulous Body of the *Proſtatæ* which was half divided was not ſeparated, but was almoſt bare, eſpecially on the left Side. The Diviſion of the Neck of the Bladder was forked towards its Body in ſuch a Manner that it form'd the Letter Y, and theſe two Diviſions ended an Inch beyond the Orifice. At the Extremity of one of them, one might ſee the *Inteſtinum Rectum*.

EXPERIMENT IX.

Which relates to the third, fourth, fifth, ſixth and ſeventh; becauſe in all thoſe, the Paſſage for extracting the Stone was made by the Introduction of the Finger.

THE Inciſion being made at the *Perinæum*, I uſed the *Gorgeret* to paſs my Finger with Precaution into the Bladder. I dilated the Orifice,

fice, as much as I cou'd, with Design to extract the Stone. Thro' the Inside of the Bladder which I had open'd, I could see that its Orifice was but slightly cut. After this, I put between the Chops of the *Forceps* the same Stone which I had used in the foregoing Experiment, and I drew it through the Wound with Difficulty enough; taking care at the same Time to tear nothing if possible. This done, I remov'd the *Ossa Pubis*, and open'd all the Passage of the Stone.

THE Slit which had been made at the *Urethra* from the End of the Incision, was continued to the Neck of the Bladder, and in the Separation occasion'd by the coming out of the Stone, the Slit was very little prolonged within the Bladder. The glandulous Body of the *Prostatæ* remain'd entire, but

that

that Part of the Neck which is attached to it was entirely ſeparated on the right Side, ſo that it ſeem'd to have been diſſected. The left Side continued whole.

EXPERIMENT X.

For the lateral Operation of M. Rau; *it may alſo ſerve for the high Way.*

I TOOK the Bladder out of a *Cadaver*, and made an Inciſion on its Body about five or ſix Lines in Length; I afterwards divided the Lips of the Inciſion with a very narrow *Pincette*, ſuch as we uſe in making our Dreſſings.

I FOUND that the Fibres which were at the Lips of the Inciſion gave Way to the Extenſion, and acquired almoſt double their Length, before the Fibres which were at the two Angles broke.

Even

Even theſe latter lengthned very much before they would break.

EXPERIMENT XI.

I CUT a *Cadaver* according to M. *Rau*'s lateral Operation; after which I meaſur'd within the Bladder the Inciſion I had made therein, it was eight Lines long, which makes ſixteen Lines in Circumference. I introduced the *Forceps* by the external Wound, and placed between the Chops within the Bladder, the ſame Stone which I mention'd in the eighth Experiment, and I extracted it almoſt without any Difficulty.

I MEASURED a ſecond Time within the Bladder, the Opening thro' which the Stone had paſs'd; it was but thirteen Lines in Length, which makes twenty ſix in Circumference; ſo that the Inciſion which had at firſt but ſixteen, had let a Stone paſs

which

which had fifty two, and was yet enlarged but ten Lines above the sixteen. The Stone therefore pass'd thro' an Opening, which being one half less in Circumference, gave Way sufficiently to allow it a free Passage.

EXPERIMENT XII.

For M. Chesselden's *Operation.*

I PERFORM'D M. *Cheselden*'s lateral Operation in the same Manner as I have describ'd it, only that I did not extract any Stone that I might not disorder any Thing at the Sides of the Incision. After this I took away the *Ossa Pubis*, and open'd by a longitudinal Incision the whole urinary Passage from the Root of the *Penis* to the Body of the Bladder inclusively, as in the other Experiments.

I FOUND that this Canal was cut by the *Lithotome* for half a Finger's Breadth

Breadth beyond the Orifice of the Bladder. The Depth of this Inciſion at the membranous Part of the *Urethra* terminated in fleſhy Fibres (theſe will either be thoſe of the *Tranſverſalis*, the *Acceleratores*, or the *Erectores*, according as the Inciſion is made more or leſs high, more or leſs deep, or more or leſs oblique.) The Body of the *Proſtatæ* was cut, but not thro' its whole Thickneſs, and the Cut was on the Side.

EXPERIMENT XIII.

I BEGAN the ſame Operation again upon another *Cadaver*, I took Care to cut the Body of the *Proſtatæ*, and the Orifice ſo that the Inciſion might extend between five and ſix Lines within the Bladder. I placed in the Chops of the *Forceps*, thro' the Bottom of the Bladder

Bladder which I had open'd, the ſame Stone above mention'd, and extracted it with ſome Trouble, taking Care however not to make any Dilaceration, if poſſible. I remov'd the *Offa Pubis*, and open'd on their Side the whole Paſſage thro' which the Stone had paſſed.

I FOUND that the Inciſion I had made with the *Lithotome* had extended itſelf into the Bladder on the left Side, very near the opening of the *Ureter*.

I HAVE ſeen it in other dead Bodies reach a Finger's Breadth beyond it, which may depend upon the Nature of the Bladder, whoſe Fibres having more or leſs Strength, lengthen or break in the Extenſion.

A

PARALLEL

OF THE

Four METHODS.

IT is by comparing the Circumſtances, and by that alone we ought to judge of the Excellence of each of theſe Methods; it is neither by the Succeſs, or the fatal Conſequences that we muſt be determined. For in ſhort, the extreme Dexterity of an Operator, the Strength of a Conſtitution, and a thouſand other Helps which Nature may lend, may extricate a Patient out of the Danger of a bad Method, and the moſt robuſt Subject may ſink and periſh under the

the Hands of an unskilful Operator, even when he follows an excellent Method.

THE Eaſe wherewith an Operation may ſeem to be perform'd is not a ſufficient Reaſon to turn the Scale on that Side; whilſt the Ignorance of ſome renders the moſt ſimple Operations extremely difficult to them, we ſee that an Operation, which in itſelf appears the moſt difficult, becomes eaſy to a careful Man habituated to the Operation, and who does not wait to make his Reflections till he has the Inſtrument in his Hand. What is it then which can give the Preference to one of theſe four Methods?

ONE may ſay in general what I obſerv'd at the Beginning; that the Method which is founded upon the Structure of the Parts, their Poſition, and upon their Mechaniſm will be leaſt liable to Acci-

dents; and therefore it is certainly the beſt. But as all Diſtempers are not alike, and one ſees by the frequent Diſſection of dead Bodies that one Bladder is large and another ſmall, that one is ſound, another diſeas'd, that the Bones are of a different Size, that ſome are hard and others ſoft: In fine, as there may be a Difference in many other Circumſtances which attend the Stone in the Bladder; all theſe ought to influence us in the Choice of the one or the other Method.

OF THE

CHOICE

OF THE

OPERATION,

With Reſpect to the Nature of the Bladder.

IN the grand *Apparatus*, and in M. *Cheſelden*'s Operation, all the Road which Nature has deſign'd for the Paſſage of the Urine is affected. The Bladder itſelf is, ſince its Neck and its Orifice ſuffer Inciſion, Dilatation, and (if I may venture to ſay it) Dilaceration, whether in what precedes the Extraction of the Stone, or in its

coming out. In the high Way, and in M. *Rau*'s lateral Operation, nothing of this enters into the Operation, but the Bottom of the Bladder is open'd, being partly cut, and ſometimes ſome of its Fibres are broken, even in the coming out of the Stone. If the Bladder had the ſame Texture in its Body as in its Neck, and in its Orifice, the Wound would be as dangerous in one of theſe Parts as in the other, or at leaſt it would not be worſe, provided the Urine may paſs off freely. But if the Texture of theſe Parts is different, their Wounds ought not to be look'd upon with the ſame Eye. Anatomy has taught us to conſider the Bladder as a hollow Muſcle (interwoven with fleſhy, membranous, and *Aponeurotic* Fibres) which may be divided and reunited in the ſame Manner as the other Parts of the Body, Experience

rience proves it to us, ſince this Bowel has been ſeen to heal after Wounds by Gun-ſhot, and all the Methods of cutting for the Stone have ſeveral Times been attended with Succeſs, altho' in all of them it has ſuffer'd either in its Body, or its Orifice.

BUT the Bladder is at its Neck and its Orifice of a very firm *Aponeurotic* Texture, incapable of ſuffering Diſtenſion without rending; whereas in its Body the Fibres are very looſe and ſuſceptible of Extenſion. Let us conſult then Reaſon and Experience in this Caſe; Reaſon, ſupported by the Knowledge of the Animal Oeconomy, teaches us that the Wounds of *Aponeurotic* Parts muſt be much more liable to an *Eryſipelas*, Inflammation, a Reflux of purulent Matter, or Putrefaction, than thoſe of the fleſhy Parts whoſe Texture

is much leſs firm, and Experience confirms it to us every Day. Here are, methinks, very cogent Reaſons, and more than ſufficient to determine an Operator to prefer attacking the Body of the Bladder, to its Neck and its Orifice.

WHEN we are to think of a Reunion, this may be made as eaſily, and with more Speed in the Body of the Bladder, becauſe the Reunion of the fleſhy Parts is effected with more Eaſe than that of ſuch as are *Aponeurotic*; and becauſe in the flowing of the Urine, the Bladder loſing its Dimenſions by the Contraction of its Fibres, neceſſarily acquires a Thickneſs in Proportion, ſo that it has as much or more in its Body, than in its Neck or its Orifice.

THUS then the Nature of the different Parts of the Bladder, ingages us to give the Preference to

the high Method, and to the lateral Operation of Profeſſor *Rau*.

OF THE CHOICE OF THE OPERATION,

With Regard only to the different States of the Bladder.

LET us conſult at preſent the different States of the Bladder, and ſee if they ought to determine us to chooſe one Method preferably to another.

THE Bladder may be ſound and large, it may be ſound and naturally ſmall, it may be ſound and be-

become ſmall by an habitual Contraction, ſuch as is that of one afflicted with the Stone, whom the Pain has obliged for a long Time to make Water every Quarter of an Hour; laſtly, it may be ſmall and diſtemper'd.

IF the Bladder be ſound and large, its Soundneſs and Largeneſs are not Reaſons ſufficient of themſelves to determine an Operator to follow one Method rather than another: Theſe two Qualities leave him at Liberty to chooſe, and ſo doing, he muſt have Regard to the other Circumſtances which may determine the Succeſs of the Operation. If he conſults the Reaſons I have particulariz'd in the foregoing Chapter, Reaſons which ſeem to demand the Preference for the high Method, or M. *Rau*'s Operation, he may determine for the one or the other of theſe Operations.

IF

IF a Bladder, which is ſound, happens to be naturally ſmall, or if it is become ſo for want of the Extenſion of its Fibres, the *Apparatus Major* and the two lateral Operations may be practis'd; but the ſame Reaſons will always ſubſiſt to determine the Operator to chooſe between theſe Operations thoſe which attack the Body of the Bladder, and the Choice cannot fall upon the high Method, as being impracticable, by Reaſon of the ſmall Diameter of the Bladder, whether it be ſo naturally, or by Accident.

IF the Bladder being harraſs'd by the Continuance of the Stone therein, is become diſeaſed, in this Circumſtance it is almoſt always ſmall. There may be three different Caſes, either it is but a little ſpongy becauſe it has been afflicted but a ſhort Time, or it really ſuppurates,

purates, or elſe laſtly there are *Fungi* within it. The firſt Caſe, in itſelf, leaves us ſtill at Liberty to chooſe the Operation, and excludes only the high Method as being impracticable. If for the Reaſons mention'd in the foregoing Chapter, they prefer M. *Rau*'s Operation, they may make the Injections into the Bladder by the *Urethra* with the Help of an *Algaly*. The ſecond and third Caſes are very perplexing to an Operator who has his Reputation to preſerve, becauſe the Publick never judge of his Ability but by the Succeſs of the Operation which is then very doubtful, whatever Method one follows. One muſt however decide in Favour of one of them. In Spite of the Advantages which I find in attacking the Body of the Bladder rather than its Neck, in Spite of the Experience of the two Patients aforementioned,

mentioned, which I cut according to M. *Rau*'s Method, and whoſe Bladders ſuppurated for near three Weeks, altho' there was no *Cannula* in the Wound, I will decide it in Favour of the *Apparatus Major*, or M. *Cheſelden*'s Operation; becauſe by theſe two Methods we may leave a free Paſſage much longer for what muſt come out of the Bladder. Beſides, it is diſeaſed enough of itſelf, without adding a Wound to its Diſeaſe, which generally does not attack its Neck ſo much as its Body.

OF

OF THE

CHOICE

OF THE

OPERATION,

With Reſpect only to the different Parts which are concern'd with the Bladder, in the Practice of each of theſe four Methods now in Queſtion.

I SHALL here follow the ſame Order which I have already obſerv'd, comparing the two Methods which attack the Body of the Bladder, with thoſe which attack the Neck. Let us ſee which are the Parts thro' which we muſt paſs to

to get at the Stone, and which may ſuffer in its coming out.

THESE in the high Way are the Teguments, *viz.* the Skin and the Fat; as alſo the *Linea Alba* which is an *Aponeurotic* Part, with the cellular Texture which ſurrounds the Bladder, and laſtly the Body of the Bladder. The Teguments ought to go for nothing; but the Inciſion of the *Aponeurotic* Membrane call'd the *Linea Alba* may prove of ſome Conſequence; nevertheleſs ſeveral Operations having been made by the high Method, not one Accident has been ſaid to have happen'd on Account of this Diviſion. The cellular Texture is liable to an Inflammation; but when it is well taken care of in this Operation, its Inciſion is rarely attended with any ill Accidents. Laſtly, the Body of the Bladder may be reckon'd in the Number of

thoſe Parts whoſe Texture is not very cloſe, as we have already ſeen; wherefore one may arrive at the Stone without fatiguing theſe Parts by tearing them aſunder. It will come out without much Difficulty, becauſe any Thing except the *Linea Alba* will yield to its Size; this being the Caſe, an Inflammation is not much to be fear'd.

NEITHER will M. *Rau*'s lateral Operation cauſe an Inflammation any ſooner than the high Method. The Parts which muſt be cut to arrive at the Stone, are the Skin and the Fat, the *Levator Ani* Part whereof is cut, the cellular Texture which is between the Muſcle and the Bladder, and ſometimes one of the *Veſiculæ Seminales* which may be excoriated, becauſe it is on the Side that the Inciſion is made; but this ſlight Inciſion cannot render the *Veſicula* uſeleſs,

leſs, becauſe its Wound will reunite like the reſt, and the Cicatrice can embrace only at moſt ſome of the little Cells whereof the *Veſicula* is compoſed. All theſe Parts are of a very looſe Texture, there is not even any *Aponeurotic* Part to ſuch cut as the *Linea Alba* in the high Method. One may then in this Operation arrive at the Stone ſtill better than in the other without harraſſing the Parts, and their Texture which is capable of yielding will facilitate the Extraction.

IN the grand *Apparatus*, the *Urethra* is cut by the *Lithotome* at its Bending, and the Inciſion ends almoſt an Inch and half on this Side the *Proſtatæ*. What compoſes the reſt of the Stone's Paſſage is the Bulb of the *Urethra* which is *Aponeurotic*, the membranous Part of the *Urethra*, the Neck of the Bladder, its Orifice and the *Proſta-*

tæ.

tæ. None of these are compriz'd in the Incision, but in vain should we attempt to dilate and make this whole Passage give Way; a Dilaceration would follow which begins where the Incision ends, and continues the whole Length of the Passage. If we dilate very much so that the Stone may pass easily, the Division extends sometimes to the Neck of the Bladder, as far as its Orifice inclusively. These Parts are of a close Texture, which will not yield but to a considerable Force. Besides, the *Prostatæ* are always either divided in two, or stript of that Portion of the Neck which is strongly attached to them, thus the Patient suffers greatly from these forced Divisions; and all these Parts being in their own Nature susceptible of an Inflammation, it is so much the more to be fear'd as their Texture is more

more firm, and their Reſiſtance greater.

M. *Cheſelden*'s Operation wherein theſe Parts are cut, is, I believe, ſomething leſs expos'd to this Accident which is moſt of all to be dreaded. Muſt it therefore be put into the Scale with the two Operations which attack the Body of the Bladder? No, ſince it is proved by Experience that the Wounds of the *Aponeurotic* Parts are more liable to Accidents than thoſe of the fleſhy Parts. I grant the Inciſion of the *Aponeurotic* Parts agrees better with them than the forced Diviſion which is made by the Dilatation; but this Advantage will amount to little when the Stone comes out, even tho' it ſhould be but of a moderate Size, as that which I uſed in making the Experiments. If after the Diviſion which is made in the *Appa-*

ratus Major upon the Introduction of the *Dilator*, the *Forceps*, or the Finger, if after the Inciſion made in M. *Cheſelden*'s Operation the Opening ſhould not be proportional to the Bigneſs of the Stone, to which we muſt add that of the *Forceps*, the Bigneſs in its coming out will occaſion a more conſiderable Diviſion in the one Operation as well as the other. The *Levator* Muſcle which ſupports the Neck of the Bladder will be violently pulled and partly torn, and the tranſverſe Ligament which faſtens the two *Oſſa Pubis* below the *Symphyſis* will ſuffer as well as the other Parts, becauſe it is not extenſible, and oppoſes itſelf to the Paſſage of the Stone. An Inflammation (as has been obſerv'd above) may conſequently follow; happy ſhould we be able to ſtop its Progreſs! In ſhort, let the Body of the *Proſtatæ* be

be cut, ſlit, or denudated, it muſt neceſſarily be contus'd by the Stone in its coming out, and conſequently there muſt be a Suppuration.

THE Nature of the Parts which muſt be concerned in getting at the Stone, or which ſuffer in its coming out, ought ſtill (I think) to determine us to chooſe one of the Operations which attack the Body of the Bladder, and of theſe two that of M. *Rau*, where there is no *Aponeurotic* Part to be cut.

OF THE

CHOICE

OF THE

OPERATION,

With Regard to the Size and Nature of the Stone, if it be poſſible to know them.

THERE is no Need of many Arguments to prove that to extract a Stone out of the Bladder, one of theſe two Things is neceſſary; either that the Aperture which is made be ſufficiently large,

or

or that the Parts which the Stone muſt touch in coming out give Way to its Bulk or its Inequalities, either by ſuffering an Extenſion, or by tearing. Let us firſt examine the Place where one can make a ſufficient Opening, and if this be as eaſy to be done at the Neck of the Bladder as on the Side of its Body.

In the four Operations which I have deſcrib'd, it is proved that the firſt Diviſion which is made proceeds to a certain Point. Therefore, if the Stone be ſmall, or of a very moderate Size, there is not one of them but may be proper for the extracting it. But if the Stone be bulky, the Caſe is not the ſame, and it muſt have a Paſſage ſufficiently large. Whatever Method one follows, one can neither make a proportional Opening at the Neck of the Bladder, or on its

Body, in which Caſe one muſt chooſe that Path where the Stone will make the leaſt Divulſion in coming out. This will ſurely be where the Parts are leaſt capable of reſiſting. In the high Method, and M. *Rau*'s Operation, the Stone meets in its Paſſage but with ſuch Parts, which, as we have ſeen, are all of a pretty looſe Texture; Parts, of which ſome may be cut ſufficiently, and others, as the Body of the Bladder, ſuffer without Reſiſtance a very conſiderable Extenſion, and an eaſy and ſlight Diviſion which almoſt wholly diſappears as ſoon as the Stone is come out. In the grand *Apparatus*, and in M. *Cheſelden*'s Operation, we find hardly any but *Aponeurotic* Parts ſupported by the Bulk of the *Proſtatæ*, which is conſiderable enough to obſtruct the Paſſage. In vain has the Dilator,

tor, the Bulk of the *Forceps*, or the Finger, in the grand *Apparatus* forced open the *Urethra*, and the Neck of the Bladder, even beyond its Orifice, and ſeparated the *Proſtatæ*; in vain, in M. *Cheſelden*'s Operation, do they open theſe Parts by an Inciſion; they will always meet with Reſiſtance in the Extraction of a large Stone, and its coming out will be difficult, both by Reaſon of the Bigneſs of all the Parts which I have juſt named, and by Reaſon of their Structure which will not allow them eaſily to give Way; to which we may add, that the Top of the Arch of the *Pubes* is ſometimes ſo ſtrait, that the Operator is oblig'd to preſs more than ordinary upon the *Rectum* in making the Extraction, which cannot be done without injuring the Tendons of the Bladder, and

and the other Parts which are join'd to its Neck.

WHEREFORE the Choice of the Operation is not very difficult, and it will fall upon one of theſe Methods wherein the Body of the Bladder is opened.

THE Nature of the Stone, if it is very uneven, or of an irregular Figure, as we find they ſometimes are, requires the ſame Choice of the Operator, ſince it ought naturally to paſs with leſs Difficulty between fleſhy Parts, which are capable of giving Way or being eaſily torn, than between *Aponeurotic* Parts which reſiſt.

IN fine, if the Stone be ſoft, and diſpos'd to break eaſily, notwithſtanding the Operator's Care, it is certain that it will be eaſier to extract it whole, if it be not compreſs'd in its coming out by the Reſiſtance of the Parts that are in the

the Paſſage. Wherefore the Preference muſt again fall upon the high Method, or M. *Rau*'s lateral Operation.

IT is evident that what I have obſerv'd deſerves the greater Attention as the Lives of the Patients depend thereupon. If then the Succeſs of *Lithotomy* depends upon the Nature of the Parts which ſuffer in the Operation, as much, nay, and ſometimes more than upon the Addreſs of the Operator, it were to be wiſh'd that thoſe who undertake to cut for the Stone were Maſters of their Buſineſs, and that they would habituate themſelves to work according to theſe different Methods, in order to chooſe that which will beſt agree with the Circumſtances that attend the Diſtemper.

IT muſt be a very nice Examination, and after mature Reflections

tions that we ought to determine, for it is not ſufficient to have prob'd a Patient, and touch'd the Stone, many Things deſerve our Regard; as the Time that he has been afflicted, the Manner how his Urine paſſes, its Quantity and Quality, the Nature of the Pain he feels, and the Place where it is moſt felt, the Time and Poſture wherein he ſuffers moſt; and laſtly, the different Condition wherein the whole Habit of the Body may be, labouring under ſeveral Diſorders, which tho' they ſeem not to have any Relation to the Stone, are yet owing to it, ſuch as are oftentimes Fevers, Suppurations or other Accidents: Theſe are Things into which a Surgeon ought throughly to enquire before he begins the Operation. Hereby he will diſcover the preſent State of the Bladder, and even that of the Kidneys which often

often ſuffer with it; hereby he will judge within a ſmall Matter the Size of the Stone, and ſometimes even whether its Figure be round or irregular, ſmooth or uneven, whether there be one or more; hereby he will be ſenſible whether he may hope to cure the Patient by taking away the Stone; and laſtly, hereby will he determine which Method he ought to follow in making the Extraction.

FINIS.

FINIS.